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ABSTRACT

The papers included in this collection focus on two topics: teaching behavior in physical education, or women in sport. The papers include the following: A Model for the Study of Pygmalion Effects in Physical Education; A Need to Look at Dyadic Interactions; An Observational Study of Teacher's Expectancy Effects and Their Mediating Mechanisms; Teacher Directed Behavior Toward Individual Students; Adventure Education; Analyzing Behavior Patterns, Objectives, Sequencing, Perspectives; The Observation and Description of the Teaching Behavior of Selected Physical Education Teachers; Developing Interaction Analysis Instruments in Physical Education; Use of Interaction Analysis in Pre-Service Teacher Preparation; The Statistical Analysis of Cafias Data; Applications of Behavior Modification in Athletic Environments; Evaluating the Behavior Contract; Accountability in the Gymnasium: A Behavior Analysis Approach; Behavioral Self-Modification in Teacher Education; Emphasizing Teacher Behavior as an Educational Tool; Contingency Management Learning Systems; Innovation in Girl's Physical Education in New Trier Township High School; The Women's Swimming Association of New York: The Golden Years, 1920-1940; Women in Physical Education and Sports at Centre College from 1860 to 1978; Women's Equity Movement in Sports at a Large University: A Movement Within a Movement, 1970-77; and In Search of the Golden Age of Women's Sports. References are included with each article. (DS)

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AAHPER Research Consortium

SYMPOSIUM PAPERS:

TEACHING BEHAVIOR AND WOMEN IN SPORT

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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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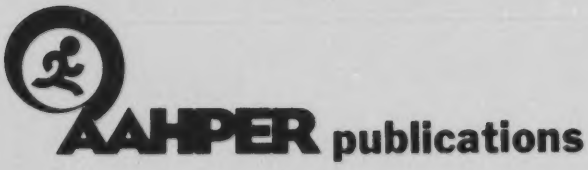

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A NOTE TO THE READER

The Symposium Papers (Volume II, Books 1, 2, and 3) are published with one major purpose in mind. The papers are intended to provide the reader with an up-to-date synthesis of research in a wide variety of areas. Presentations were invited from each of the seven associations of AAHPER. Review boards screened Symposium Presentations under the direction of the Research Consortium President-elect. Special attention was given to the quality of the presentations and to the relevance of the research syntheses to the practioners in each of the seven associations.

The Symposium Papers are being made available for sale at the convention at which the actual papers are presented. This is done to make these research syntheses available to Alliance members at the earliest possible time, while the information is current and useful. To do this, it was necessary to make each author responsible for preparing his or her own manuscript. To be eligible for publication authors were required to submit their intent to publish early in the year and submit a manuscript, typed in the proper formate, by February 5, 1979. In cases where authors failed to meet the above listed guidelines, the papers were deleted from this publication.

These Symposium Papers are photographed from original manuscripts submitted by each author. The screening of symposia served as the editing process, once accepted sole responsibility for the content rests with the author(s).

It is hoped that these Symposium Papers are useful to members of all associations of AAHPER.

Richard H. Cox
Editor

David H. Clarke
President-elect
Research Consortium

Note: Because of the length limitation imposed on authors reference lists are necessarily short. In most cases more complete reference lists are available from authors on request.

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A Model for the Study of Pygmalion Effects in Physical Education

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INTRODUCTION

The relationship between the student and teacher has enormous consequences for the academic and emotional well-being of the child. However, while educators profess to focus on the total growth and development of every child, only a few children actually reap all the benefits of the teaching process. One reason for this is that teachers consciously or unconsciously exhibit preferential behavior toward certain students in their classroom. Rosenthal and Jacobson (1968) in their book Pygmalion in the Classroom provide convincing evidence that teachers give differential treatment to their students as a result of certain expectations held by the teacher. Rosenthal and Jacobson hypothesized that these expectations for student achievement would function as self-fulfilling prophecies.

A self-fulfilling prophecy is an expectation or prediction which initiates a series of events that cause the original expectation or prediction to come true. In other words, if the teacher expects a particular student to perform well and be a high achiever in the classroom, and begins acting toward that student in certain ways, the student may, in fact, live up to the expectation of being a high achiever. Likewise, if the teacher expects a particular student to be a low achiever and behaves in accordance with that expectation, then the student will behave as he believes he is expected to behave. This behavior may be manifested in either a positive or negative direction (Martinek & Johnson, 1978).

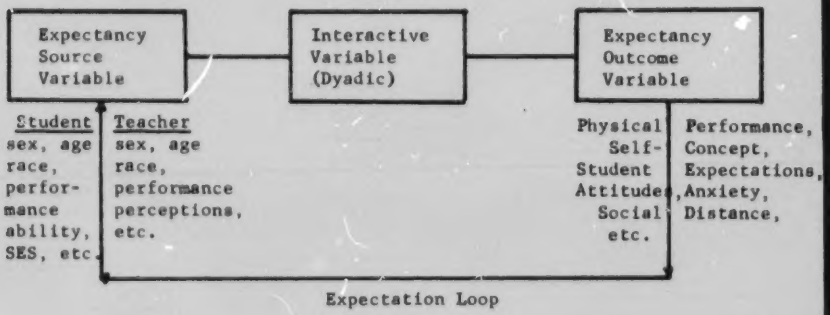
Although much concern about the study's methodological procedures has been expressed (Thorndike, 1968; Cronbach & Fruby, 1970; Elashoff & Snow, 1971), replications of the study nevertheless supported the existence of the Pygmalion Theory. For example, Brophy and Good (1974) reviewed over sixty studies that indicated teacher expectations do, in fact, mediate differential teacher-student interaction. Unfortunately, none of the studies reported by Brophy and Good (1974) looked at expectation effects in the physical education setting. Perhaps this is due to the fact that physical education research has at best looked at the effects of instructional models on large groups of children rather than individual students. This researcher believes that a model from which pygmalion research can be conceptualized and guided is one solution. The purpose of this paper is to present such a model, outlining the process through which this research can be pursued.

PROPOSED MODEL

The tenets of the Model further suggest 1) that teachers form expectations of their students as a result of perceptions gained through previous contact with the student or by the receiving of past information about the student's achievement potential; 2) that expectations ultimately affect the quantity and quality of the interaction between the teacher and student; 3) that teacher expectation in conjunction with the quality of interaction can influence specific behavior and affective outcomes of the student; and 4) that expectancy outcomes will subsequently reinforce those initial expectations formed by the teacher.

The function of the proposed model is to identify three major variables from which methodological concerns of a researcher can be effectively negotiated. The three variables represented are: 1) the Expectation Source Variable; 2) Interactive Variable; 3) Expectancy Outcome Variable. Figure 1 illustrates the model and the relationship of these three variables to one another.

Figure 1- RESEARCH MODEL FOR THE STUDY OF PYGMALION EFFECTS IN PHYSICAL EDUCATION



In looking at the model we see that each variable has various sub-variables which represent specific points for study. For example, the sub-variables listed with the Expectation Source Variable are such things as student's age, sex, performance ability, appearance, etc. Likewise, similar variables found within the teacher's context might also represent other areas from which the researcher may choose to study. The Interactive Variable shows the feasibility of looking at dyadic interaction between a teacher and a single student or small group (no more than two). Wilmot (1975) contends that even when a teacher talks with two children simultaneously the interaction is considered to be viewed as a dyadic interchange by each of the students. The Expectancy Outcome Variable may consist of a number of sub-variables that are the result

of teacher expectations or the result of specific types of teacher-student interactions. These outcomes may be representative of such constructs as self-concept, physical performance, student expectations, etc. It is also theorized that the various outcomes can further reinforce and perpetuate the initial expectations held by the teacher. The Expectancy Loop shown in the Model represents this relationship. During the initial planning stages of a study it is important that the researcher identify the specific variables so that a methodological framework can be established. The selection of the sub-variables is based upon the researcher's own particular interests as well as the feasibility of obtaining a sample truly representative of the population to be studied.

In order for the reader to understand the operational characteristics of the Model, the following sections will include several studies which are representative of various aspects of the Model.

Expectation Source Variable

Research pertaining to the Expectation Source Variable relates to sources from which certain expectations are formed. As previously mentioned, these sources stem from a number of variables originating from both teacher and student contexts. For example, Feshbach (1969) found that the sex of a teacher influences their preferences toward male and female students. In his study, female student teachers read paragraphs describing sixteen fictional students and then rated these students on a preferential scale. The results indicated that female teachers were favorably biased toward girls and unfavorably against boys in their expectations of performance. Crowe (1977) also found that both male and female teachers tend to expect better physical performance from boys than girls during physical education instruction.

In a more recent study conducted by Ansorge et al. (1978), the effects of order of performance in competitive gymnastics on judgmental biasing was studied. It was believed that since gymnastics coaches typically place their gymnasts in rank order from poorest to best for competition in each event, judges may expect a better quality of performance on routines within the team order. The study was conducted to determine if gymnasts are at a scoring disadvantage if they appear first in competition or at a scoring advantage if they appear last. The results of the study showed that gymnasts were scored significantly higher if they appeared in the fifth position than if they appeared in the first position.

Expectation Formation and the Interactive Variable

By and large few studies (especially in physical education) have looked at the effects of expectations on dyadic interaction patterns. However, two recent studies by Crowe (1977) and Martinek and Johnson (1979) have attempted to look at this dimension in the physical education setting. Crowe (1977) investigated the effects of teacher expectation on four variables related to Rosenthal's Four Factor Theory (Rosenthal, 1974). The four variables include

Climate, Feedback, Output, and Input. An additional variable Touch, was also included by Crowe. The five variables were investigated in terms of high and low expectancy groups of junior high school students. The results of the study showed the following: 1) Designated high achievers were given significantly more opportunities to respond to the teacher questions than the low achievers. 2) Designated high achievers were found to be treated more warmly by their teachers than the low achievers. 3) Although there was no significant difference in the overall amount of praise given to the high and low achievers, there was significantly more affirmation and praise given to the high achievers than the low. 4) Designated high achievers were found to receive more attention and were given more opportunities to respond. 5) No significant differences were found between high and low achievers in terms of the type of new material taught or the frequency with which the teachers touched their students.

Similar findings were expressed in a study by Martinek and Johnson (1978). These researchers investigated the effects of teacher expectations on specific teacher-student behaviors occurring during physical education instruction. The study further described the effects of teacher expectations on the development of the students' self-concept. (Self-concept was measured by the Martinek-Zaichkowsky Self-Concept Scale for Children (1977).) Five elementary school teachers were asked to rate their students according to how they expected each to perform in terms of physical achievement. A total of 100 students, the highest ten and the lowest ten, in each of the five classes, comprised the sample. All five teachers used in the study were experienced physical education teachers who had previous instructional experience with the children under observation. A Dyadic Version of Cheffers Adaptation to Flanders Interaction Analysis System (1974) was the observational tool used to identify the teacher-student behaviors. The results of the data analysis showed that the high expectancy group received significantly more encouragement, acceptance of ideas, and analytic-type questions. Additionally, male students were found to give more rote responses than females. In one of the classes, high-expectancy males demonstrated more student initiated-behavior than low-expectancy males. However, the female high-expectancy group in the same class showed significantly less student-initiated responses than the low-expectancy group. However, this interaction appeared to be only unique with one particular class since the remaining four classes showed non-significant expectancy x group x sex interaction. In three of the five classes, expected high achievers were also significantly higher in self-concept than the low achievers.

Expectancy Outcome Variable

It is the belief of this writer that if expectancy effects occur and operate in the instructional setting, they will also be influential in the development of certain physical and psychological aspects of a child. Researchers have reported numerous studies that have looked at expectancy effects on such things as academic performance (Rosenthal & Jacobson, 1968; Crano & Mellon, 1974), self-attitudes (Purkey, 1978), student expectations (Entwisle & Murray, 1978) and I.Q. (Sutherland & Goldschmid, 1974). In looking at the

Expectancy Outcome Variable of the proposed Model, we can see this relationship. However, it is important to note that the question of whether teacher expectancy or differential teacher-student interaction affects student outcome still remains a hypothetical issue. For example, the previously cited study by Martinek and Johnson (1979) demonstrated that high expectancy students had a more positive self-concept than the low expectancy group. Although this finding appears to have significant meaning for the relationship between expectation and student growth, the effects of the dyadic patterns--e.g., encouragement, praise, acceptance of ideas--on emotional well-being still remains empirically unanswered. Therefore, future research into this dimension is encouraged.

The question of what causes what is a persistent problem in educational research, especially in studies of the effects of teachers' expectations on student outcomes. The Expectation Loop of the Model provides a possible answer to this question as well as a possible explanation to the self-fulfilling prophecy phenomenon. The Expectation Loop is based upon the assumption that if the teacher expects and encourages higher level performance the student will perceive this encouragement and, therefore, achieve at the expected level. Consequently, the expectation of the teacher is further reinforced resulting in a perpetuation of both teacher expectation and differential treatment toward the student.

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A Need to Look at Dyadic Interactions

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Introduction:

For close to fifty years, researchers in education have been investigating teacher-student interactions in classrooms. Education research, however, has contributed relatively little information which teachers can apply in their daily interactions with students. Perhaps one reason for this is that very little research has focused on the individual student (Brophy and Good, 1974). The purpose of this paper is to present a rationale for research into teacher interactions with individual students in physical education classes.

Historical Overview:

Since the early efforts of Anderson and Withall, literally hundreds of observational systems have been developed and employed in classroom research, a good number of these were designed to record teacher-student interactions. The most widely used system for reducing classroom interaction into suitable categories for tabulation and computation is the Flanders Interactional Analysis System (FIAS). This system and modifications of it have provided researchers and practitioners with an abundance of information concerning classroom interaction between teachers and students.

For the past 10 years or so, researchers in physical education have also employed observational instruments to systematically record and analyze events in the gymnasium. The most popular system employed in physical education research appears to have been Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS). For example, a recent publication listed a series of 18 studies, conducted since 1973, which have employed CAFIAS to systematically record and analyze data concerning teacher-student interactions (Cheffers and Mancini, 1978). The results of these studies have provided valuable information concerning the nature of teacher-student interaction patterns in a variety of settings. It should be pointed out, however, that most of this research recorded and analyzed teacher behavior directed at the entire class.

There are some important problems with observational systems which gather information on the class as a whole.

Inherent Problems:

One problem is that the strategy is too general to yield information about events which influence individual students.

There are important differences in individual student behavior in classrooms. Part of this difference may be attributed to presage variables (race, sex, socioeconomic status). Some of the difference, however, may be attributed to the treatment which individual students receive in school (Brophy and Good, 1974). For example, students of different races or socioeconomic status receive different treatment from their teachers. In order to record such differential treatment, instruments are needed that permit an observer to record teacher behavior directed toward individual students.

Reported results which fail to take individual differences into account are often misleading. For example, FIAS permits the observer to record teacher talk and student talk in separate categories. The results of the observation may indicate that 60 percent of the class time was taken up by teacher talk and 40 percent by student talk. The problem with lumping student talk into a single category is that individual differences are lost. It is conceivable that only one or two students did all the talking to account for that 40 percent.

A similar difficulty exists with graphic representations of teacher talk. The use of grouped data, whether by percentage or mean scores, does not provide any information indicating to whom the teacher was talking. The teacher may have spent the entire class working extensively with one or two students, but grouped data will reflect only extensive "teacher talk".

Individualized Teacher Behavior:

Describing and analyzing teacher behavior directed toward individual students or sub-groups of students is an area of inquiry which researchers in physical education are just beginning to recognize. Brophy and Good pioneered this area of research in the classroom, and the results of their studies provide a useful basis for extending this research to the world of the gymnasium.

These 2 researchers demonstrated that teachers behave differently with students displaying different characteristics (Brophy and Good, 1974). These results were obtained by employing observational systems such as the Teacher-Child Dyadic Interaction System which permits a trained observer to collect data on individual students rather than the class as a group.

Three recent studies in physical education have modified popular observational instruments, and focused on teacher behavior directed toward individual students in the gymnasium. Martinek modified CAFIAS to permit a recorder to identify the recipient of teacher behavior. The study was designed to describe the effects of teacher expectation on: (1) specific teacher-student behavior, and (2) on the development of the student's self-concept. The results demonstrated that students perceived, by their teachers, as belonging to the high

expectancy group received greater amounts of encouragement, acceptance of ideas, questions and directions than students belonging to other groups. Also, male students were found to offer more rote responses than females, and higher achievers had higher self-concepts than low achievers. (Martinek, 1979)

Crowe conducted a study which modified Rosental's Four Factor Theory to investigate teacher expectations and teacher-student dyadic interactions. Teacher's differential treatment of students was measured in terms of the following variables: climate, feedback, input, output and touch. The results demonstrated that students perceived as high achievers by their teachers: were asked more questions, had more evaluative comments directed at them, received more attention, were taught more new material and were given more opportunities to respond than those students perceived as belonging to the lower achiever group. (Crowe, 1979)

Finally a study which employed a modification of both FIAS and CAFIAS explored the quality and quantity of individualized teacher behavior based on student gender and teacher's perception of student's in-class personality, skill level performance and participation. The Individualized Teacher Behavior Analysis System (developed by Dr. George T. Lewis, University of Massachusetts) was employed to collect data from two different classes taught by each of the five teachers and subjected to three levels of analysis (data for the entire study, individual teachers and for each class). Boys received more: praise and encouragement, questions, lectures directionsand criticism than did girls. The teacher perception variables did not yield consistent results for the three levels of analysis. Many of the findings for individual classes were lost when the data was arranged for each teacher or for the entire study. A fact which strongly suggests that the class should be the unit of analysis in naturalistic studies. (Allard and Oien, 1979)

Further investigations of this nature are needed because individual patterns of interaction are an important factor to consider when analyzing the performance of any group, and because the extent and nature of difference in the individual's experience are a necessary ingredient to fully understand the nature of interaction between teacher and student.

A better understanding of the patterns and associated factors in the distribution of teacher attention to individual students would have consequences for both theory and practice. A concern shared by a large segment of the American population (teachers, parents, students and political leaders) is that schools should provide equal opportunity for all students. However, many teachers realize that they probably do not provide all students with an equal amount of time and instruction. Unfortunately, the teacher's sense of this discrepance is likely to be subjective and impressionistic at best. Individualized teacher behavior studies could provide

objective data concerning the manner in which teachers react to individual students in physical education classes.

Most teachers are coming to believe that a substantial amount of their behavior should be directed to individual students. Recent trends such as individualized instruction, modular instruction and learning centers may serve as models to increase the amount of teacher behavior directed toward individual students. It appears more important than ever to study this type of teacher-student interaction as a basis for understanding and improving current educational practices (Brophy and Good, 1974).

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An Observational Study of Teachers' Expectancy Effects and Their Mediating Mechanisms

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Educational theorists throughout the years have discussed the positive and negative outcomes of teachers' expectations on pupils' intellectual development and potential. Dr. Robert Rosenthal (1974) stated that "until recently the evidence for the hypothesis of the self-fulfilling prophecy has been observational or correlational, rather than experimental"(p.1)

In an effort to find answers and to document evidence that teachers' expectations or prophecies could make some differences in either their evaluation of their students or their students actual performance, Dr. Rosenthal (1963, 1964, 1968, 1969, 1976) undertook extensive studies in both the laboratory (animal and human subjects) and in the educational classroom. Rosenthal's work addressed a major social problem and as a result, the "expect-effect"phenomenon precipitated a number of replications.

For the past twenty years, the research on expectancy effects has accumulated and there is enough evidence to support Rosenthal's theory of the self-fulfilling prophecy, namely, that the expectancy effect does indeed exist. Since 1970, investigators (Brophy and Good, 1970; Rothbart, 1971; Rubovitz and Maehr, 1971) have made an attempt at explaining the Pygmalion Effect rather than placing their emphasis on replication of the effect.

In 1973, Rosenthal (1974) reviewed and summarized all of the studies of the self-fulfilling prophecy. He focused on those studies which revealed evidence of the mediation of self-fulfilling expectations operating in classrooms, offices, and factories. From his preliminary evidence, Rosenthal devised a four factor "theory" on the mediation of self-fulfilling expectations. His contention was that teachers, counselors, and supervisors who expect superior performance from their charges treat them differently than expected inferior performers in four particular ways:

1. Climate: Teachers appear to create a warmer socio-emotional climate for their "special" students in the following ways" Smile, wink, establish and maintain eye contact, pat on back, place hands on student, raise eyebrows and smile, give sign or any gesture or approval, indicate friendliness, support and understanding, have pleasant-sounding voice.
2. Feedback: Teachers appear to give to their "special" students more differentiated feedback as to how these students have been performing. More attention is given and more active teaching occurs with special students. Both Climate and Feedback involve differential

teacher warmth toward students of whom more versus less is expected. However, if a teacher shows warmth and gives praise specifically in response to a correct response, or helps to correct a response (by giving clues or rephrasing), or asks for further information, then the Feedback factor would be operating.

3. Input: Teachers appear to teach more material and more difficult material to their "special" students. As compared to the Feedback factor where active teaching occurs (praise for correct response, correcting incorrect response, or giving clues), the distinction between Feedback and Input is in the amount of new material and more difficult material taught to students of whom more is expected.

4. Output: Teachers appear to give their "special" students greater opportunities for responding. Skill and competence is encouraged by the teacher and greater demands may be imposed by the teacher on students of whom more is expected. These demands and opportunities can take form in the following ways: giving students more time to respond or perform, calling more often on those students, or asking those students to perform more difficult tasks or answer more difficult questions.

This present study was concerned with the identification of the operation of the Pygmalion Effect and the intervening factors responsible for the effect. The purpose of the study was to investigate and identify specific and differential teacher behaviors that affect student behavior based on Rosenthal's Four Factor Theory (1974, pp. 14-24). An additional variable, Touch, was included as a fifth factor. These variables were used to identify teachers' differential treatment of students according to the teachers' expectations, and to identify students' differential responses according to the teachers' expectations (high or low).

Four different physical education activity classes were selected for observational study. The teachers were asked to rank their students (total group in each class) in order of their physical achievement or skill potential. The rankings were used as the criterion measure of the teachers' expectations for their students' performance in physical education. Three judges, trained in the use of the Brophy and Good Interaction Analysis System (1969) observed 96 (24 students from each class) junior high school students on six separate days within a two-week period. Forty-eight of the students were designated as high achievers and 48 of the students were designated as low achievers.

Summary sheets were developed for separate tabulations of the coded observations. Twenty-four frequency measures (quantitative) and 32 percentage measures (qualitative) were derived from the coding. Analyses of variance were performed on the five variables to assess the effects of teacher expectations and class, and their interactions on the obtained rankings, and to determine the effect of five different variables on high and low achievers. The data yielded the following results:

1. Quantity and types of contacts. High-achieving students were asked more questions and given more opportunities to respond 75% more of the time than the low-achieving students. Teachers approached the designated high achievers 61% more of the time for procedural activities. Designated high-achieving students were given the opportunity to interact and react with their teachers 71% more of the time than the designated low-achieving students for total dyadic contacts. The data indicated that there was a significant difference between the high and the low expectancy groups and that these groups were treated differently according to the teachers' expectations. The data, however, do not specifically indicate whether the expectations were determined by the students or by the teachers.

2. Climate. The data for the Climate variable provide evidence that teachers treat their designated high-achieving students more warmly than they treat their designated low-achieving students. Teachers gave praise to their high-achieving students 62% more than they gave praise to their low achievers. The frequency measure indicates that the amount of praise and warmth can be interpreted only as a causal factor and attributed only to objective differences.

The measures on direct comparisons of both groups under equal circumstances indicated that when teachers expected students to perform better, the teachers treated those students more warmly and gave more support (both verbally and non-verbally) than they did to those students of whom they expected less. Designated high-achieving students answered more questions correctly and as a result received more evaluative comments (affirmation and praise) for their correct performance than did the designated low achievers. Teachers also praised the designated high achievers more than they praised the designated low achievers when responses were incorrect. The evidence clearly indicates that teachers display differential behaviors to the high and low achievers under equal situations.

3. Feedback. The data for the variable Feedback indicated some support for teacher expectations, but the evidence is limited. Although the level of performance was significantly greater for the designated high achievers than for the designated low achievers, there was not enough evidence to suggest that teachers gave more sustained feedback to the designated high achievers. However, there were significant differences in the amount of affirmation coupled with praise which suggests that teachers do reward their high achievers for the desired or correct responses expected from the teacher. The designated low achievers were not praised for their good performance as much as the designated high achievers. Further work is needed to confirm teacher expectancies relating to the Feedback variable.

4. Output. Strong support was not provided for the Output Factor. The evidence does significantly suggest that the designated high achievers did receive more attention and were given more opportunities to respond more than the designated low achievers. The evidence, however, did not show a significant difference in the amount of reinforcement given by the teachers. However, when the highs responded with correct answers, the teachers rephrased the question or made suggestions providing a second response opportunity for the high achievers more than they did of the low achievers. More evidence is needed to support the Output Factor.

5. Input. There was no significant evidence to suggest that teachers taught more new material to the designated high achievers than they did to the designated low achievers. Stronger support is needed to confirm teacher expectations relating to the Input Factor.

6. Touch. There was no significant evidence to support the contention that teachers touched their designated high-achieving students more than they touched their designated low-achieving students. The frequencies of interactions were minimal and more evidence must be accumulated to provide additional support of the Touch Factor. Teachers did not exhibit any more Climate, Feedback, Output, or Input when they touched the designated high achievers than they did when they touched the designated low achievers.

The contributions of the present study have increased further the probability that expectancy effects occur in an educational setting. Additional evidence is needed, however, to substantiate the present findings and to corroborate Rosenthal's Four Factor Theory (1974). It was concluded that stronger support was needed to show that teachers communicate their expectations to their students through differential teacher behaviors.

In addition, other factors (extension of observation time, measuring attention time, sex and race, separation of verval and non-verbal climate, anecdotal record) that were not examined in the present study may need to be looked at to determine the extent of the operation of the Pygmalion Effect.

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Teacher Directed Behavior Toward Individual Students

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PURPOSE

The purpose of this study was to describe the quality and quantity of Individualized Teacher Behavior (ITB) that male and female Junior High school physical education teachers direct to their students and to determine the degree to which these behaviors are related to:

1) Teacher perception of student skill performance
2) Teacher perception of student in-class personality
3) Teacher perception of student class participation and
4) Student gender

STUDY

The Individualized Teacher Behavior Analysis System (ITBAS), developed by Dr. George T. Lewis (University of Massachusetts) was used to systematically collect and describe 8 categories of teacher directed behavior toward individual students. These behaviors:

(1) accepts students feelings
(2) praises and encourages
(3) accepts students ideas
(4) asks questions
(5) Lecturing
(6) gives directions
(7) criticising or justifying authority
(8) total teacher directed behavior

were then analyzed in terms of their relationship to student gender and teacher perception rankings for student in-class personality, skill level and participation.

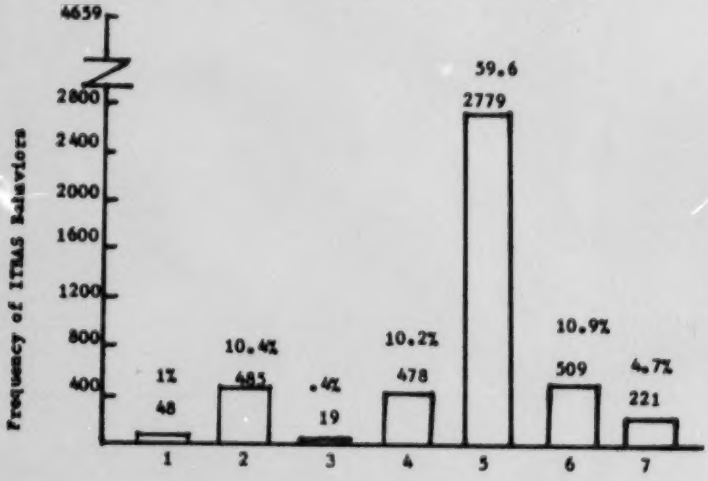
The study was conducted in a regional junior high school consisting of 7th, 8th and 9th grade classes. Subjects consisted of 5 teachers (each teacher having at least 9 years experience) and 316 students (from 10 different classes - two classes for each teacher). Individualized teacher behaviors were collected during three (3) on-site observation sessions with each class. A set of previously developed ranking procedures were then administered to each teacher, following all observations, to collect teacher perception of students in their classes on each of the three variables (in-class personality, skill, and participation).

RESULTS

Description of Individualized Teacher Behaviors

Figure I presents the distribution of (ITBs) by ITBAS categories for the entire study - this figure shows that 60 percent of

teacher directed behavior toward individual students was providing information or lecturing. Teachers giving directions, asking questions and providing praise and encouragement occurred with approximately the same frequency, each about 10 percent of total ITBS. Criticizing or justifying authority accounted for 5 percent of the total behavior. Less than 1% of the behavior was accounted for in each of the categories: accepting a student's ideas and accepting a student's feelings.



Behaviors by ITBAS Categories

1) accept's a students feelings
2) praises and encourages
3) accept's a students ideas
4) asks questions
5) lectures
6) gives directions
7) criticizes or justifies authority

FIGURE 1 DISTRIBUTION OF TEACHER BEHAVIORS BY ITBAS CATEGORY FOR THE ENTIRE STUDY

An analysis of the behavior distribution for the two observed classes taught by each teacher indicates that the total ITB's varied substantially from class to class except for Teacher 4. Also it should be noted that Teacher 4 emitted far fewer behaviors than his colleagues. The mean frequency of total behavior per class was 466 behavior counts and 932 counts per teacher.

Figure 2 illustrates the distribution of individualized teacher behaviors across the student population. 59 students or 19% of the student population were the targets of 50% of the total individualized teacher behaviors, ranging from 23 to 97 individualized teacher behaviors counts. 257 students or 81% of the population were the targets of remaining 50% individualized teacher behavior, ranging from 0 to 22 behavior counts per student. 9 students in the population received no individualized teacher behaviors directed toward them.

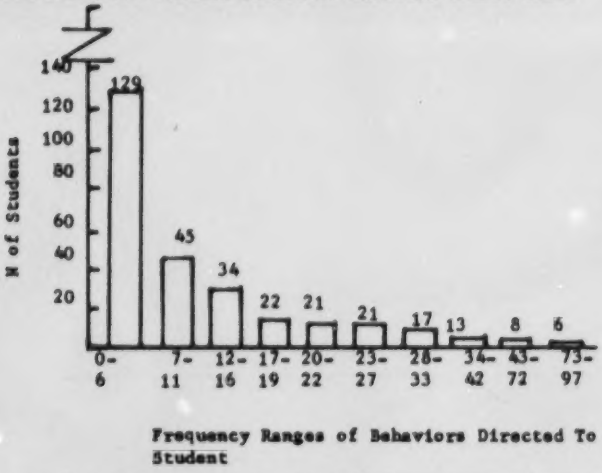


Figure 2 - DISTRIBUTION OF ITB ACROSS THE STUDENT POPULATION

Group Comparisons

A 2 sample-median statistical analysis was employed to determine the degree to which ITB's are related to three previously mentioned variables of teacher perceptions of students and student gender. The results revealed the uniqueness of teacher and classes with regard to rates and kinds of ITB. In most cases, they are situation specific and cannot be generalized across all teachers or all classes.

Skill

In 4 out of 5 teachers and 5 out of 10 classes they taught, observed significant results were found analyzing the relationship of ITB to teacher rankings of student skill levels. Teacher 5 consistently directed more ITB to those students

perceived high on skill whereas Teachers 1 and 4 (6 out of 8 comparisons of students) targeted more ITBs to those students perceived low in skill. Categories of praise or encouragement, lecturing, giving directions, criticizing or justifying authority and total ITB were those behaviors which were directed in 16 out of 22 comparisons of students whose skill levels were high.

In-Class Personality

In 3 out of 5 teachers, 4 out of 10 classes, observed significant results were found when analyzing the relationship of ITB to teacher rankings of student in-class personality. Teachers 1 and 4 most consistently directed more ITB to students ranked as having least desirable personalities. Teacher 5, in only one significant finding, directed more ITB to students ranked as having most desirable personalities. ITBAS categories of asks questions, lecturing, giving directions, criticizing and justifying and total behavior were those behaviors found directed to students 9 out of 11 times to having ranked as least desirable personality.

Student Gender

In some classes and under some teachers boys received more behaviors associated with: praise, questioning, lecturing, directing, criticizing and justifying authority and total behavior than did girls. These results establish a clear pattern in that boys were favored over girls in 18 of the 21 cases in which significant differences were found.

Participation

In some classes and under some teachers, students perceived by their teachers as belonging to high or medium groups of participation received different amounts and types of teacher behavior than those students belonging to the lower groups. These results, however, do not form a clear pattern because of the degree to which they vary among the five teachers and 10 classes.

DISCUSSION

The unequal distribution of teacher behaviors directed toward individual students found in this study clearly supports the findings of similar studies previously conducted. (Crowe, 1977; Brophy and Good, 1970; Kranz and others, 1970) Support also is generated for those factors (student gender and teacher perceptions of student skill performance level, in-class personality and class participation) which may influence such unequal distributions of ITB.

An analysis of the findings for ITB in relationship to student gender and teacher perceptions of students by class indicate that to generalize across teacher populations is inaccurate. One conclusion which might be drawn from this analysis is that teacher behavior evolves from differing value structures resulting

in differential treatment of students. Further, it may be concluded that the quality of differential ITB distribution is a function the teacher being situationally reactive to the social chemistry of each class. If further research reveals supportive evidence to the above conclusions it becomes quite evident for the need to develop individualized in-service programs promoting teacher improvement and growth. Before such efforts are begun, however, the need remains for more in depth study of teacher behavior relative to the effects on each student.

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Adventure Education: Analyzing Behavior Patterns, Objectives, Sequencing, Perspectives

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Introduction

The purpose of this study was to describe and analyze Adventure Education with pre-adolescent children in a resident setting. The study described interaction patterns as students related to each other, to the staff, and to the environment. Through systematic observation comparisons were made between these behavior patterns and related program objectives. A comparison of two activity sequences was made for investigative purposes. The Adventure experience (also called Environmental-Adventure), consisted of four, two week sessions emphasizing a field experience of a modified Outward Bound nature for approximately twenty coed students eleven to fourteen years of age per session. The technique of Participant Observation with interview was used to collect data through the framework of "symbolic interaction". Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used for analysis of the spontaneous instructor-student interaction. Student behaviors were compared, using twenty-three CAFIAS parameters of intended and observed instructor-student interaction, class or group structure, and variety of teaching agency. During each session CAFIAS categories were coded on all instructional periods and on the Adventure activities of the program. Participant observation data was collected by recording the statements and actions of the students and staff as they were participating in the Adventure phases. Raw data was systematically evaluated to build an explanatory model describing the point of view or "perspective" of the students.

Basis for Research

Research in Adventure Education has concentrated on investigations of such dependent variables as: self-concept, self-esteem, self-awareness, personality, anxiety and fear, and school performance (9). Having the bulk of research concentrated has left a void in the data available on improving program effectiveness which could be termed definitive information about program merit. Metcalfe states that until tests can be devised that can measure character development, improvement in levels of maturity, acceptance of responsibility, and other intangible factors, the real worth of Adventure programs will be unproven and a matter of value judgement. Until then, immediate attention can focus on clarification of program objectives and continued probing of the effective domain (8).

A significant study in 1973 by Smith, Gabriel, and Anderson (11), on the Colorado Outward Bound School established the model for the kind of Adventure Education evaluation needed for assessing program effect. Although the study did maintain the use of variables of self-assertion, self-esteem, acceptance, and self-awareness as the basis for research, there was inconsistency noted across the three courses evaluated. The run of a battery of different research techniques (standardized instrumentation, time series analysis, and participant observation) provided "a greater power of detection and validity than is often the case" (12). Taken collectively, the study offered a comprehensive analysis and description of the essence of Outward Bound.

In assessing program effectiveness, it is essential to identify which elements of the program are being effective. To determine this, there is a need to isolate and measure such variables as teaching styles, student-teacher interaction, and student-student interaction. Furthermore, in Outdoor Education settings there is a need to take into account the effects on the teaching/learning process of social and environmental interaction (12).

Schwab and Harper (10), in their work on assessing curriculum, point out that four components or parameters of learning continually influence the learning situation and deny the ability to isolate important learning variables. These variables include: (1) the nature of the learner; (2) the nature of the teacher and teaching style; (3) the nature of knowledge; and (4) the teaching/learning milieu in which these variables interact.

Through the use of long-term systematic observations of the program processes, variables can be monitored and controlled to determine their influence on program outcomes. By utilizing multiple measures of analytic observation, an indepth analysis of the learning evnironment and the diversity of the instructor-student, environment-student, and peer interaction patterns can be provided. Research on Adventure Education programming has been limited, particularly in view of describing processes and procedures in attaining program objectives. To evaluate process, requires an indepth longitudenal study of the individuals and groups interacting "in situ" while the program is in operation (6).

Instruments and Procedures

This study was primarily insterested in those activities which occurred when the subjects were participating in the Adventure component of the program. The data collection included all observed and recorded actions and statements of participants through the use of the open-ended interview.

As suggested by Becker, Geer, Hughes and Strauss (1), the research was concentrated on areas of concern and/or interest important to the participants and on those matters that occassioned conflict, stress, and tension (i.e. problem-solving activities, ropes courses). Areas that were observed included the students, the staff, the setting, the purpose (why people were brought together in a particular situation and how they reacted to the purpose of the situation, the social behavior, and the frequency and duration of particular situations occuring in the environment). Through this system of observing what happened,

listening to what was said, and asking questions about what was meant by various actions and statements, this data became the body of uninterpreted data that was analyzed.

Participant observation data interpretation followed the lines of plausibility inference suggested by Fereira (5). This technique takes the form of treating the perspective as being the customary way an individual or group deals with a situation. The items of evidence for a perspective is considered important, should appear frequently, and in a variety of settings, and be shared by all members of the group which holds the perspective. During data gathering, repeated statements and actions that seem to indicate particular working hypotheses were formulated and modified through repeated observations.

Perspectives that were built from the raw data, verifying the hypotheses, were organized into areas or categories and summarized. Interpretation lead to the building, inductively, of a model of hypothetical statements. This was done through an inductive analysis of the data gathered from the observations, by sorting, combining, and summarizing. The process terminated with the recombining of this data into perspectives or explanations. These perspectives were then gathered or clustered into group perspectives which were combined to form an explanatory model. The model, having as its base, the collectively held perspective of the participants, which represented overall the amassed body of evidence as a situational descriptive explanation.

In this study CAFIAS was used to describe the teacher-student interaction, class structure, and variety of teaching agency in the Environmental-Adventure program. In addition, CAFIAS provided a description of the institutional practices, discriminating between teaching patterns, and the determination of the relationship between certain behaviors and student growth. Relationships between observed behavior patterns and certain program objectives were also determined. This was achieved by describing the congruency of observed behavior patterns and projected programatic behavioral objectives.

In each situation, the observer watched the interaction during the activity for a period of approximately five minutes before beginning the coding procedure. This permitted time to become accustomed to the situational climate. The observer wrote down the CAFIAS category number for the behavior observed every three seconds, or whenever a change in behavior occurred (3). There were approximately 400 tallies during each observation period.

The analysis of the CAFIAS data was performed using the Fortran computer program developed by Rodgers (4), to compute the required ratios, matrices, and interaction patterns. Comparisons of each session's activities were then made, with the twenty-three CAFIAS parameters to describe the behaviors exhibited, and to explain differences that occurred (3). CAFIAS behavior patterns were compared with the expressed statements and/or actions displayed by participants during program activities. These behaviors were analyzed on the criterion of congruency with the desired outcomes or objectives of the activities.

Results and Conclusions

The results indicate that the CAFIAS instrument is an effective instrument in describing the instructional activities of the Adventure program and that the participant observation data was consonant with the behaviors described by CAFIAS (13). The participant observation data developed a student perspective that camp was a "rewarding challenge that was fun." This perspective specified that students found their experience at camp to be fun; at times "difficult", "hard," and "challenging," yet something that most regarded as "worthwhile" and would like to do again. The processes and procedures used in Environmental-Adventure were perceived by students and staff as aiding in the accomplishment of activity objectives. In all of the observed activities, the behaviors were congruent with the activity objectives. The effects of altering various activity sequences did not produce negative or off-task behaviors on the part of the students; behaviors in altered sequences were identical to behaviors in initial sequences. Unpredictable behavior that was off-task was virtually non-existant (occurring less than 2%).

Problem solving activities involved more students in the role of the teaching agent. In problem solving activities, there was a minimum of environmental influence. Instructors in these activities tended to be less direct, and allowed more pupil directed initiation which could be classified.

The behaviors exhibited in all of the Adventure components, as well as the other activities investigated in this study, indicated instructor dependency 65% of the time. Instructor acceptance and encouragement of student activities was also featured. The instructor influence was noticed in all of the activities. The environment became an important teaching agent in the ropes courses and in all risk-taking tasks where the element of fear was a factor. In activities in which student emotional responses were in evidence, a corresponding acceptance response indicating empathy or encouragement by the instructor was regularly recorded.

This study combined the use of CAFIAS and participant observation for the first time. Results indicate that the use of such multi-dimensional instrumentation is critical if the substantial subjective data available at this time supporting Adventure experiences, is to be believed.

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The Observation and Description of The Teaching Behavior of Selected Physical Education Teachers

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A persistent criticism of observation research relates to the single visitation technique as opposed to successive, daily, repeated observations extending across curriculum change. The purpose of this study was to observe and describe the teaching behavior and interaction patterns of four elementary school physical education teachers longitudinally. Each subject was an experienced and qualified teacher of physical education.

A modified case study design was employed. Specifically, each teacher was observed twice a day (AM and PM) for a period of twenty consecutive teaching days, resulting in forty observations per subject.

The instrument used was The Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS), which describes the interaction patterns and teaching behavior during instructional sessions. Using the program developed by Rodgers (Cheffers et al, 1974) to facilitate the data analysis and compute the required ratios and interaction matrices, the data were presented in three major categories: 1. Use of CAFIAS categories, 2. Thirty-one major CAFIAS parameters, and 3. Patterns of interaction between teacher and students, as well as among students.

Mean percentages of CAFIAS category usage for each teacher are presented in Figure 1. Figure 2 illustrates the variability of three selected CAFIAS parameters. Figure 3 summarizes the interaction patterns observed in this study.

Findings of this study indicate that: 1) Teaching behavior and interaction patterns remained stable. Chi-Square analysis revealed that only two of the fifty-one measures employed in this study demonstrated significant variability across all teachers (i.e., teacher use of questioning, nonverbal, and pupil initiation, nonverbal, teacher suggested). 2) In this study the teaching patterns could be summarized universally as lecture-information giving, teacher direction, and predictable student response. Teacher response to student behaviors in the various forms of feedback was singularly absent. The following episode illustrates a typical student-teacher interaction observed in this study:

> Teacher: "Boys and girls, when I give the command I want each of you to go get a basketball and shoot foul shots only for five minutes. Go!"
>
> Students: Each student follows the teacher's instructions as directed, i.e., each student selects a basketball and shoots only foul shots for five minutes.

3) The teachers in this study rarely required students to utilize higher levels of cognitive functioning other than to produce robot-like responses. Genuine student interpretation was rarely observed. An example of typical student cognitive activity is provided in the following episode:

Teacher: "How many strikes is a batter permitted in softball before he is put out?"
Student: "Three."
Teacher: "Yes. How many balls must a batter receive before he can 'walk' to first base?"
Student: "Four."

4) Slight differences in the measures employed were noted across grades K-6, with kindergarten classes being the most unique. 5) Nonverbal student initiation was much higher in afternoon classes than in morning classes. 6) Female teachers used more verbal praise, encouraged student nonverbal interpretive responses, allowed much more pupil initiation, and utilized students as teachers much more than their male counterparts. However, in twenty-seven of the thirty-one major CAFIAS parameters measured there were no differences between male and female teachers. 7) As observed in this study, teaching behavior and interaction patterns remained constant across the days of the week, with minor differences noted on Mondays and Fridays. 8) The incidence of teacher empathetic behavior was almost nonexistent. Of 112,054 individual behaviors recorded, only twenty instances of teacher acceptance of student emotions were noted (categories 1 and 11), a 0.02 percent rate of occurrence. Furthermore, these twenty empathetic behaviors were observed in the movement classes of only two of the four teachers. In an era characterized by a revival of humanism in education, this latter finding reaffirms the direct, traditional, and often autocratic approach too commonly employed by physical educators.

Based on the results of this study, it can be concluded that: 1) Teaching behavior and interaction patterns vary minimally over twenty teaching days, including several curricular changes. Modifications in the current practice of one-time, random observations for supervisory purposes are not justified at this time. 2) The teaching behavior and interaction patterns recorded indicate that traditional, non-humanistic teaching styles prevailed in the movement classes observed in this study. 3) The variables of teacher sex, time of the day, grade level, and day of the week of the movement class, have a negligible influence on the teaching behavior and interaction in physical education classes.

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Figure 1

Mean Percent of Behaviors in each CAFIAS Category

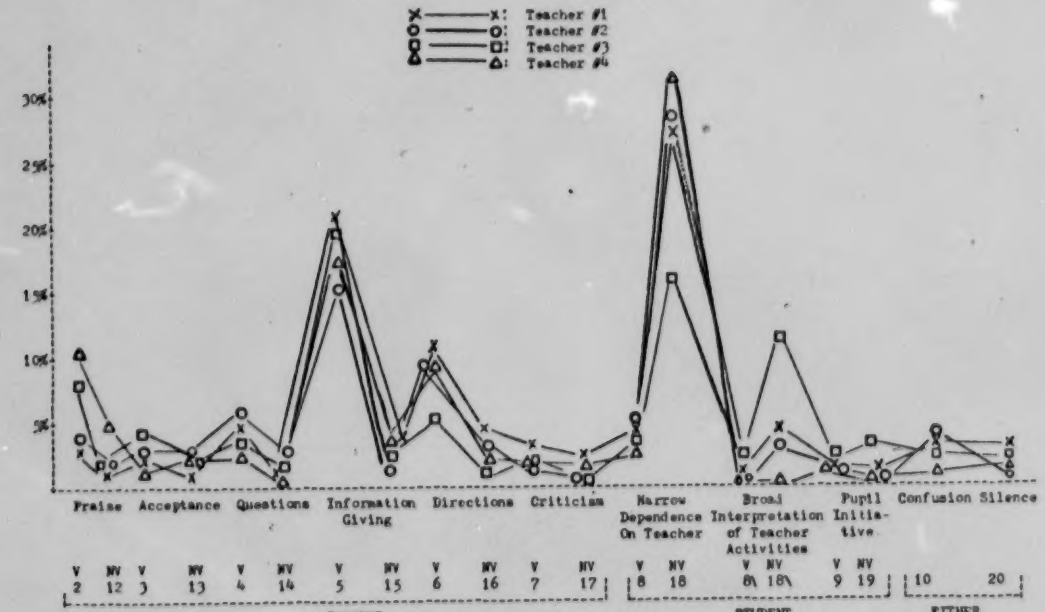
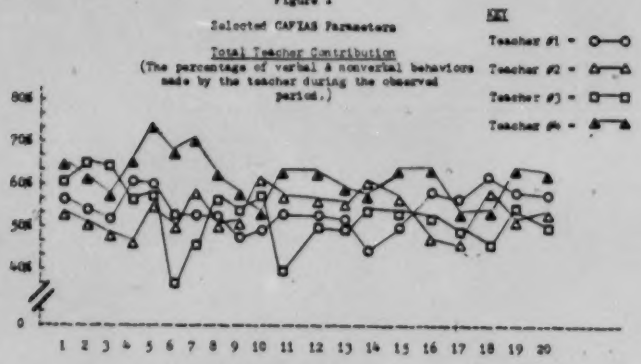
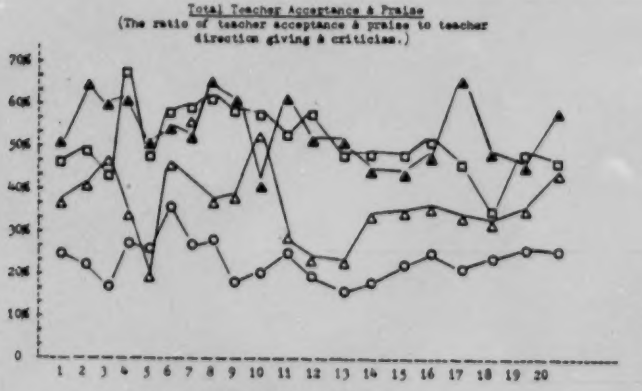


Figure 1

Selected CAFIAS Parameters


KEY
Teacher #1 =
Teacher #2 =
Teacher #3 =
Teacher #4 =
Total Teacher Contribution
(The percentage of verbal & nonverbal behaviors made by the teacher during the observed period.)
80%
70%
60%
50%
40%
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


Total Teacher Acceptance & Praise
(The ratio of teacher acceptance & praise to teacher direction giving & criticism.)
70%
60%
50%
40%
30%
20%
10%
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

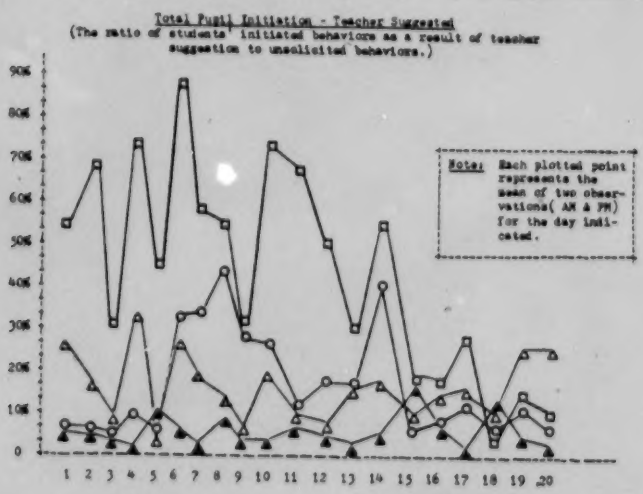

Total Pupil Initiation - Teacher Suggested
(The ratio of students' initiated behaviors as a result of teacher suggestion to unsolicited behaviors.)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Note: Each plotted point represents the mean of two observations(AM & PM) for the day indicated.

Figure 3

Most Frequent Interaction Patterns in Elementary School Physical Education Classes

Developing Interaction Analysis Instruments in Physical Education

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Flanders developed the most widely known interaction analysis system (Charles, 1972). Flanders Interaction Analysis System (FIAS) is a system for observing and coding the verbal interaction between a teacher and a student. Flanders (1970) explained the purpose of interaction analysis systems as being two fold: (1) to help teachers identify and control teaching behavior and (2) to explain variations that take place during the course of classroom events (Furst, 1971). Campbell and Barnes (1969) wrote that the wide use of FIAS in research is due to the fact that it is the most thoroughly developed system. Since FIAS was designed to record not only the actual events which take place within a classroom but also the sequence of these interactions, it has proven to be a valuable observation tool. Although Flanders' efforts were appropriate, even ingenious for the late fifties and sixties, considerable ground rule division was needed before the Flanders system could be used effectively in the seventies and eighties (Cheffers, Archambault, and Green, 1974). Cheffers (1972) felt that there were three major limitations in FIAS which prevented its successful use in physical education classes: it was concerned only with verbal behaviors, it viewed the teacher as the sole teaching agent in the classroom, and it did not allow for coding the class structure except where the entire class was functioning as one unit.

There have been many modifications of FIAS, developed in order to increase its sensitivity or usefulness in various situations. In physical education, Dougherty (1970), Melograno (1971), Goldberger (1970), Love (1969), Love-Roderick (1971), and Mancuso (1972) attempted to modify FIAS to be more sensitive and useful in physical activity settings. The Cheffers' Adaptation of the Flanders' Interaction Analysis System (CAFIAS) is another modification of Flanders' system. CAFIAS was developed originally with the purpose of describing physical education classes with sensitivity and application not hitherto possible with the Flanders' system. As the name implies, CAFIAS is not a new system, rather an adaptation for specific application in predominantly movement oriented settings. CAFIAS consists of Flanders with the following changes:

(A) It provided a device for the coding of nonverbal behavior through a double category system, so that any behavior can be categorized as verbal, nonverbal, or both verbal and nonverbal. Systematic observations of physical education classes as well as more sensitive observations in classroom situations were now possible. Table 1 illustrates the categories of the CAFIAS System.

TABLE 1

THE CATEGORIES OF CAVIAS

Categories	2 - 17	Teacher Behaviors
"	8 - 19	Student Behaviors
"	10	Confusion
"	20	Silence

Relevant Behaviors

Categories	Verbal	Nonverbal
2 - 12	2 (A positive value assessment) Praises, commends, jokes, encourages.	12 Face: Smiles, nods with smile, (energetic) winks, laughs. Posture: Applauds through clapping hands, congratulatory pats on shoulder, head, etc., rings student's hand, embraces joyfully, laughs to encourage.
3 - 13	3 (No value implied) Accepts, clarifies, uses, and develops suggestions and feelings by the learner. N.B. Flanders category one which refers to teacher acceptance of student feeling and emotions is included in this category. Coders are reminded to use 1 and 11 on the tally sheets. These behaviors are tallied separately for analysis purposes and included for parameter purposes in the matrix as 3's and 13's.	13 (Elevates student performance onto a par with teacher performance) Face: Nods without smiling, tilts head in empathetic reflection, sighs empathetically. Posture: Shakes hands, embraces sympathetically, places arm around shoulder or waist, catches an implement thrown by student, accepts facilitation from students, takes part in game with students, supports child during activity, spotting in gymnastics.
4 - 14	4 Asks questions requiring student answer.	14 Face: Wrinkles brow, opens mouth, turns head with quizzical look. Posture: Places hands in air quizzically to expect answer, stares awaiting answer, scratches head, cups hand to ear, stands still halfturned toward person, awaits answer.
5 - 15	5 Gives facts, opinions, or processes ideas or asks rhetorical questions.	15 Face: Whispers words inaudibly, sings or whistles. Posture: Gesticulates, draws, writes, demonstrates activities, points, points to board.

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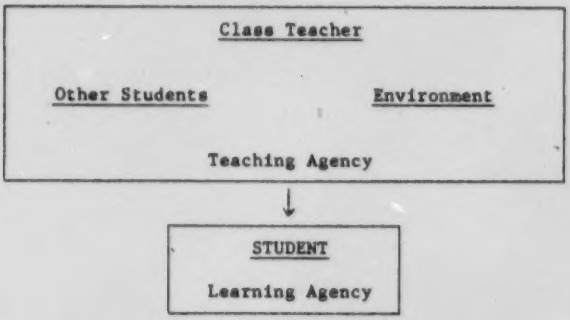
THE CATEGORIES OF CAFIAS (Continued)

6 - 16	6 Gives directions or orders which will result in immediate observable student response.	16 Face: Points with head, beckons with head, yells at using language other than recognizable words. Posture: Points finger, blows whistle, holds body erect while barking commands, pushes a child in a given direction.
7 - 17	7 (A negative value assessment.) Criticizes, expresses anger or distrust, sarcastic or extreme self-reference.	17 Face: Grimaces, growls, frowns, drops drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head. Posture: Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down.
8 - 18	8 Student response that is entirely predictable, such as obedience to orders and responses not requiring thinking beyond the comprehension phase of knowledge (after Bloom).	18 Face: Poker-face response, nods, shakes, gives small grunts, quick smile. Posture: Moves mechanically to question or directions, responds to any action with minimal nervous activity, robot-like, practices drills, waits in line, etc., student responds by putting hand up in answering to teacher direction.
8½ - 18	Zing (8½) Predictable student responses that require some measure of evaluation, synthesis, and interpretation from the student but must remain within the province of predictability. The initial behavior was in response to teacher initiation. Student interpretation from teacher in discussed activity. A student questioning when related strictly to topic under discussion.	Zingtoom (18½) Face: Look of thinking eyes, pensive formal expressions. Posture: Interprets movements, tries to show some arrangement that requires interpretive thinking; e.g. works on gymnastic routine; test taking; interpretation of task cards; all game playing. Student puts hands in air in order to give answer to teacher question.
9 - 19	9 Pupil-initiated talk that is purely the result of their own initiative and which could not be predicted, (either positive or negative behavior).	19 Face: Makes interrupting sounds, gasps, sighs. Posture: Puts hands up in air to ask (unsolicited) question of teacher, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of the games.
10 - 20	10 Stands for confusion, chaos, disorder, noise.	20 Face: Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

(B) Diversification of the agency responsible for performing the teaching function was provided.

It is obvious that the classroom teacher is only one of the agents responsible for providing the teaching stimulus. Peers, and structures within the local environment, are critical factors which have often been overlooked in the general assessment of teaching. Based on the philosophy that when learning occurs, teaching has taken place, CAFIAS, through postscripting, permits the classification of the teaching agency as (1) class teacher, (2) other students, or (3) the local environment. Figure 1 presents a model outlining this structure.

Figure 1



The current system of providing large numbers of students with a single teacher has proved economical, but has been seriously questioned by those interested in providing opportunities for individuals to learn at differing rates involving the learners more as participants than as recipients in the learning process.

(C) CAFIAS permits the coding of the class as (A) whole, where the entire class is functioning as one unit, (B) part, where the class is broken down into small groups or the students are working individually, or (C) with no teacher influence, where there is no observable class teacher present in the immediate building. This is accomplished by the technique of placing a W, P, or I beside each tally when the structure of the class changes. This makes it possible to have a time line analysis of the class structure, as well as giving percentages of each class structure for comparative purposes. A series of postscripts and subscripts, supported by a minimum of ground rules, comprise the operating procedures.

Table 2 summarizes thirty-two (32) parameters about which CAFIAS provides data.

TABLE 2

MAJOR PARAMETERS OF CAFIAS

Major Parameters of CAFIAS	Abbreviation	Statistic
1. Teacher Contribution, Verbal	TCV	%
2. Teacher Contribution, Nonverbal	TCNV	%
3. Total Teacher Contribution	TTC	%
4. Student Contribution, Verbal	SCV	%
5. Student Contribution, Nonverbal	SCNV	%
6. Total Student Contribution	TSC	%
7. Silence	S	%
8. Confusion	C	%
9. Total Silence and/or Confusion	TSC	%
10. Teacher (as teacher)	TT	%
11. Other Students (as teacher)	ST	%
12. The Environment (as teacher)	ET	%
13. Verbal Emphasis	VE	%
14. Nonverbal Emphasis	NVE	%
15. Class Structure (as one unit)	U	%
16. Class Structure (group or individualized)	P	%
17. Class Structure (no teacher influence)	I	%
18. Teacher Use of Questioning, Verbal	TQRV	Ratio
19. Teacher Use of Questioning, Nonverbal	TQRNV	Ratio
20. Teacher Use of Questioning, Total	TTQR	Ratio
21. Teacher Acceptance and Praise, Verbal	TAPRV	Ratio
22. Teacher Acceptance and Praise, Nonverbal	TAPRNV	Ratio
23. Teacher Acceptance and Praise, Total	TTAPR	Ratio
24. Pupil Initiation, Verbal (Teacher suggestion)	SVITSR	Ratio
25. Pupil Initiation, Nonverbal (Teacher suggestion)	SNVITSR	Ratio
26. Pupil Initiation, Total (Teacher suggestion)	TSITSR	Ratio
27. Pupil Initiation, Verbal (Student suggestion)	SVISSR	Ratio
28. Pupil Initiation, Nonverbal (Student suggestion)	SNVISSR	Ratio
29. Pupil Initiation, Total (Student suggestion)	TSISSR	Ratio
30. Content Emphasis (Teacher in-put)	CETI	Ratio
31. Content Emphasis (Student in-put)	CESI	Ratio

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While CAFIAS was designed for use in physical education classes, its expansion of the FIAS categories has meant that it can also be used to present a clearer and more sensitive picture of the teaching-learning process in academic classes. Due to this, and to the fact that it is a valid and reliable instrument, it has been used in several ways in the five years since its development.

Table 3 outlines CAFIAS research substance.

TABLE 3

CAFIAS RESEARCH 1972-1978

RESEARCHERS	CAFIAS HAS BEEN USED TO DESCRIBE: (RESEARCH SUBSTANCE)	YEAR OF COMPLETION OR PUBLICATION
Mancini, Cheffers, and Zaichkowsky	(1) interaction patterns of students and teachers in different decision making situations	1976
Batchelder Scriber	(2) comparisons of predictive estimates of classroom process behaviors in math, english, physical education, and health classes	1975; 1977
Evaul	(3) comparisons of open and traditional classrooms	1976
Travis	(4) comparisons of teaching patterns of liberal arts tutors in different experimental circumstances	1977
Bechtold	(5) relationships between volunteer high school students and moderately retarded high school students in physical education programs	1976
Cohen	(6) interaction measures between therapists and clients	1976
Martinek; Chertok; Lydon	(7) effects of varying teacher models on the development of motor skills and self concepts	1977; 1975; 1978

RESEARCHERS	CAFIAS HAS BEEN USED TO DESCRIBE: (RESEARCH SUBSTANCE)	YEAR OF COMPLETION OR PUBLICATION
Pratt & Owen Doenges	(8) elementary children as modifiers of teacher behavior	1974; 1976
Cheffers, Batchelder, and Zaichkowsky	(9) the effects of movement on improving ethnic relationships	1976
Cheffers & Mancini	(10) high risk programs for teacher training in psychological education	1975
Kielty; Hendrickson, Mancini, Morris & Fisher; Vogel; Rochester, Mancini & Morris; Mancini, Getty & Morris	(11) the effect of interaction analysis on the preparation of pre-service teachers	1975; 1976; 1976; 1977; 1978
Keane	(12) comparisons of sex differences in teachers' leadership styles	1976
Mawdsley	(13) comparisons between educators teaching normal and atypical children in physical education classes	1977
Durkin; Wood	(14) critical evaluations during residential field experiences for middle school children (Durkin) and urban children (Wood)	1978; 1978
O'Donnell	(15) comparisons of various group learning experiences in college freshman history	1978
Faulkner	(16) comparisons of male and female pre-service teaching behaviors	1976
Agnew; Mason	(17) comparisons of male and female teaching and coaching behaviors	1977; 1978
Batchelder & Keane	(18) analysis of college lecturing	1977
Cheffers and Mancini	(19) teacher-student interaction of the Videotape Data Bank Project--Teachers College, Columbia University	1978

Table 4 describes an episode illustrating the use of CAFIAS along with comments interpreting the categorization.

TABLE 4

Episode--Illustrating Categories 9, 7-2, 8 of CAFIAS

Teacher:	Enters gymnasium. Children are working together building a pyramid. Teacher watches for 30 seconds. (Ten)	19 19's
Teacher:	"Good try, boys, but you will find it easier if you place 4 boys at its base instead of three. Would you like to try that?"	2 7 2 4
One Child: (Bob)	"Yes But what if we counterbalance with 3 boys to the right side?"	8 8\
Teacher:	"Interesting thought, Bob." Teacher frowns, shakes head.	2 17
	"No, Bob, it won't work because you are not really counterbalancing. But you were nearly at the solution with the first base you tried." (Puts hand on shoulder of Bill whose suggestion it was.)	2 7 2 2 13
(Bob):	"Let's try that first base again, gang."	8\

Comments

The boys had initiated the activity without teacher direction; hence their actions are recorded as 9's or 19's. Even if the teacher had made the suggestion during the previous lesson, there is no way of telling this, so it can be assumed that the boys initiated the activity. Obviously the teacher's reaction was not punitive; he corrected the child's (Bob) answer and yet was careful to praise at the same time. (7-2)

The presence of 8\'s indicate student interpretive activity resulting from initial teacher suggestion.

CODING PROCEDURES

Coders record numerical symbols of the appropriate behavior in order of occurrence. This is sometimes referred to as Spontaneous Event Recording. A time limitation is placed at 3 seconds if extended behaviors are taking place, but the recorder will code all behaviors that are observable.

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Use of Interaction Analysis In Pre-Service Teacher Preparation

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Until recently, experience in the art of teaching has been viewed as the prime indicator of success. There is no intent here to minimize this experience, but rather to discuss an alternative method of looking at teaching where experience may even be nonexistant. The type of feedback that a teacher receives about his/her teaching behavior and his/her students is more valuable than time spent in teaching. Too many times we have heard a statement such as "I have 10 years of teaching experience", but how many times have the 10 years been of the same type of teaching as that person's first year of teaching. This is not always the fault of the teacher, but the manner in which we have provided feedback to teachers about their teaching. If we are to explain the moment to moment events during the teacher learning process we must employ the use of some form of systematic observation to produce the feedback. The use of systematic observation is moving the teaching process away from the realm of unexplainable, hit-or-miss interaction in the words of Mosston "idiosyncratic" toward a process that can be objectively planned, observed, assessed, modified, and carried out. CAFIAS is one example of systematic observation. It is an instrument which measures interaction analysis. Through the use of CAFIAS, college and university professional preparation teachers (the methods teacher and the supervisors of student teachers), the practitioner in the field, and the administrator have an opportunity to become feedback agents to the teachers by providing specific information of the on-going teacher and student behaviors at the instant of occurrence.

The following is an example of the use of CAFIAS in pre-service training of physical education majors. These four studies, conducted at Ithaca College, examined the use of interaction analysis (CAFIAS) as a training treatment and an observation instrument for supervisory feedback.

Hendrickson, et. al. (1976) used CAFIAS in a pre-service training program of physical education teachers during three micro-peer video taped lessons throughout a semester. Forty pre-service secondary physical education majors were divided in two groups in order to analyze teaching behaviors as a function of instruction and supervision in interaction analysis. The control subjects (N=20) viewed each of their taped lessons and received conventional supervisory feedback. Treatment subjects (N=20), in addition to viewing their teaching and receiving conventional supervisory feedback, received a computer printout of CAFIAS which illustrated their teaching behaviors and discussion related to the instruction of CAFIAS. Data were collected by live coding of CAFIAS during the third micro-peer lesson.

The effects of instruction and supervision in the practical application of coding interaction analysis on the teaching behavior of 36 junior physical education majors to determine the relationship between teacher-effectiveness and teacher-behavior variables was studied by Mancini, et. al. (1977). Each subject taught micro-peer lessons that were videotaped for feedback and evaluation of teacher effectiveness. Control (N=18) and treatment (N=18) groups received the same instruction in both methods and CAFIAS with supervisory feedback including computer printouts of CAFIAS. The treatment group also received instruction in the following: 1) introduction to the coding of a teaching lesson, 2) experience in coding a micro-peer teaching lesson, and 3) supervisory feedback on students' coding. Data for final analysis of teacher behavior and teacher effectiveness were collected from the last micro-peer lesson taught by each subject. Teacher behavior was identified through the use of CAFIAS, and teacher effectiveness was assessed through the use of the Teacher Performance Criteria Questionnaire (TPCQ). A live coding of CAFIAS was done during the last teaching lesson to analyze the teacher behavior, and video tapes were made concurrently with the coding. A panel of five judges viewed the video tapes taken during the last teaching situation to measure teacher effectiveness. Each judge rated each subject on the TPCQ items immediately following observation of the videotape of each lesson.

Vogel used 40 physical education student teachers to test the effects of instruction and supervision in CAFIAS on their teaching behavior. The experimental group (N=20) received 10 hours of instructions in the understanding and use of CAFIAS, and the control group (N=20) received no instruction in CAFIAS. All subjects were videotaped on a random basis during two 50 minute lessons, with data for the final analysis collected from the second taping. CAFIAS was used to analyze the teaching behavior of the student teachers.

In an extention of Vogel's study (1976), Mancini, et. al. (1978) used thirty physical education student teachers to determine the effects of instruction and supervision in the practical application of coding on their teaching behavior. During the first five weeks of the study, the treatment group (N=15) received 15 hours in the instruction and supervision of the practical application of coding CAFIAS--while the control group (N=15) received conventional supervisory feedback at the same time. All subjects were videotaped three times during the semester: at the beginning, immediately following the respective training periods, and one month after the second taping. Data for the analysis were collected from the second and third tapings. Table I illustrates the differences in the treatment and the control groups in each study.

TABLE I

EFFECT OF INTERACTION ANALYSIS ON THE
TEACHING BEHAVIOR OF PRE-SERVICE TEACHERS

Researcher(s)	Control	Treatment
Hendrickson, Mancini, Morris, and Fisher, 1976	Video Tape Feedback	Video Tape Feedback Instruction in CAFIAS Computer feedback of teacher performance
Mancini, Rochester, and Morris, 1977	Video Tape Feedback Instruction in CAFIAS Computer feedback of teacher performance	Video Tape Feedback Computer feedback of teacher performance Instruction in CAFIAS Instruction, supervision, and experience in coding of CAFIAS
Vogel, 1976	Video Tape Feedback	10 hours of instruction and experience in the coding of CAFIAS Computer feedback of teacher performance
Mancini, Catty, and Morris, 1978	Video Tape Feedback	15 hours of instruction and experience of coding Computer feedback of teacher performance

In these four studies it was hypothesised that there would be no significant differences between the teaching behaviors of pre-service teachers (junior physical education majors and physical education student teachers) receiving instruction and supervision in CAFIAS, and those pre-service teachers who did not receive instruction and supervision in CAFIAS. This was rejected: differences in behaviors favored the treatment groups.

From the evidence provided by these investigations, the following conclusions were supported:

1. Pre-service teachers trained in interaction analysis made greater use of verbal and nonverbal questioning than pre-service teachers not trained in interaction analysis.

2. Pre-service teachers trained in interaction analysis exhibited more praising and accepting behavior, both verbal and nonverbal, of students' ideas and actions than pre-service teachers not trained in interaction analysis.

3. More student initiation, both teacher and student suggestion, occurred in classes taught by pre-service teachers trained in interaction analysis.

4. More student contribution occurred in classes taught by pre-service teachers trained in interaction analysis.

5. Pre-service teachers trained in interaction analysis structured their classes more toward individual and small group instruction than those pre-service teachers not so trained.

6. Pre-service teachers trained in interaction analysis varied the teaching agent in their classes more than those pre-service teachers not so trained.

7. Pre-service teachers trained in interaction scored higher on the teacher effectiveness variables which were measured by the Teacher Performance Criteria Questionnaire than those pre-service teachers not so trained.

8. The effects of instruction in interaction analysis on the teaching behavior of pre-service teachers (student teachers) was maintained one month after cessation of the training period. This lends further support to the lasting effects of instruction and supervision in interaction analysis of pre-service teachers.

9. Pre-service teachers receiving instruction in interaction analysis exhibit more indirect teaching style than those pre-service teachers receiving conventional supervisory feedback regarding their teaching.

10. The combined use of interaction analysis, its uses and implications, and videotaping was beneficial to pre-service teachers.

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The Statistical Analysis Of Cafias Data

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To record the verbal and non-verbal behaviors of teachers and students, an observer using the Cheffers' Adaptation of the Flanders' Interaction Analysis System (CAFIAS) places a tally under one of 22 categories. Each classification describes the general nature of a class of behaviors that are expected to occur with varying frequencies in an educational setting. A trained observer using CAFIAS is required to code or categorize the behavior that is occurring every three seconds and/or each time the behavior changes.

For descriptive purposes and/or immediate supervisory feedback, the frequency of occurrence of specific categories of behavior may be used. Further analyses, however, are possible, since the frequency of occurrence of a specific behavior may be expressed as a percentage of the total number of behaviors recorded during an observation period. This gives an indication of the relative amount of time that each class of behaviors occurred. Another level of analysis is possible when the ratios of several of the observed behaviors are determined. For example, the variable, Teacher Use of Acceptance and Praise (Verbal), is determined by combining the teachers use of acceptance and praise in contrast to a combination of the behaviors of teacher use of directions and criticism. To facilitate the descriptive analysis, a computer program has been developed (Cheffers, Amidon, and Rodgers, 1974). This program generates a report that summarized the observations into percentages and ratios.

Since CAFIAS presents a flexible method of objectively recording the frequencies of specific classes of behavior that occurs within the educational environment, it might be expected that its use would not be limited to only descriptive analysis. CAFIAS has been used to assess the effects of various interventions on the behaviors of teachers and students in actual teaching situations. As an example, the question might be posed, "Are teachers who receive video-taped feedback of their teaching more likely to change their subsequent teaching behavior than their counterparts who receive traditional forms of supervision?"

Evidence to support an hypothesis arising from such a problem might be determined by randomly assigning teachers to groups and groups to supervisory conditions. The criteria to be assessed might well be various parameters recorded by an observer using CAFIAS. The assumptions and limitations of such a study are, of course, numerous. Nevertheless, the answers to questions arising from the field of teacher education need to be determined in as careful a manner as possible, which suggests that appropriate analytical procedures need to be used. Since CAFIAS records a number of criteria i.e. behaviors, multivariate statistical

procedures are recommended.

To test the signigicance of difference between two populations on a set of p outcome measures, Hotelling's T^2 procedure is suggested. This procedure weights the dependent variables in a manner that maximizes the distances between the group centroids, and then tests the null hypothesis of differences in the profiles of the dependent measures in the populations from which the samples were drawn. The T^2 statistic searches for the combinations of the dependent variables that optimize the chance of statistical significance. This procedure not only optimizes the chance of finding a significant difference between the two populations, it does this without the increased chance of making a Type I error.

Just as the T^2 statistic is recommended for determining the difference between two groups when multiple dependent measures are used, the multivariate analysis of variance (MANOVA) is recommended when more than two groups are of experimental interest and when the subjects are assessed on multiple criterion measures. Following the finding of a significant T^2 or MANOVA, profile analysis, separate univariate analyses, and an analysis of the discriminant function are suggested as options that may be used to answer various questions of interest. Analytical procedures such as these have been used in studies by Rochester (1976), Vogel (1976), and Getty (1977).

Another set of analytical problems arises when one asks questions such as, "What is the relationship between certain behaviors and other measures of teaching effectiveness?" For example, Rochester (1976) related teaching behavior, as assesed by CAFIAS, with teacher effectiveness that was measured by the Teacher Performance Criteria Questionnaire (TPCQ). Since each of these instruments has multiple dependent measures, the canonical correlation between the two instruments was determined. The canonical correlation weights the two sets of variates to determine the maximum correlation between the two measures, tests the correlation for significance, and then searches for subsequent weightings that could result in other significant correlations under the constraint that the succeeding correlations be orthogonal to those that were previously determined in the analysis. This procedure might be considered as an analysis of the factors common to the two instruments. Following the determination of a significant canonical correlation, the investigator will, in all probability, analyze the canonical variates to determine which variables contribute greatest to the relationships between the two measurement devices. Rochester (1976), for example, found two significant canonical correlations between CAFIAS and TPCQ and, after analyzing the canonical variates was able to identify those behaviors that tend to be related to effective teaching.

This presentation has reviewed a few of the procedures that have been used in the analysis of data arising from a behavior observation system (CAFIAS). It is not suggested that these procedures are the only ones that could be employed. Additionally,

the reader should not be given the impression that these methods are without question in the current context. A current study is being made of the effects of arcsine transformations of the CAFIAS data. Preliminary results suggest that little if any differences in empirical findings will occur as a result of the use of such transformations.

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Applications of Behavior Modification In Athletic Environments

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Technological advances have greatly contributed to the record breaking athletic performances in the past twenty-five years. Space age equipment, flawless facilities, nutritionally planned diets, and conditioning programs developed on the basis of strict physiological studies all have helped produce the modern day athlete.

Compared to these giant strides found in the technological areas, only minor advances have been made in the study of human behavior in the athletic environment.

As stated by Rushall and Siedentop (1972) most behavior can be seen and/or heard. As such it is observable, measurable, and capable of objective analysis. This type of behavior provides the basic data for scientific analyses. In psychology it is referred to as operant psychology, behavior modification or applied behavior analysis. Behavioral data when properly analyzed and applied, can help improve our athlete just as the technological advances have.

McKenzie and Rushall (1973) noted an absence of the application of behavioral approaches in physical education and sports environments.

Bill Heward has attributed the lack of behavioral techniques in athletic environments to the psychodynamic orientation of our sport psychologists:

> As a result the stuies of sport and athletics have dealt primarily with such variables as: drive, determination, guts, winning attitude, desire, and self-concept; all hypothetical constructs which do not lend themselves to experimental analysis. (Heward, 1976, p.2)

Most coaches do not utilize a scientifically derived data base to guide their coaching techniques. In fact, some still yell at players for mistakes and assign extra laps, push-ups, or other aversive conditioning activities for poor performance. None of these "coaching techniques" has been experimentally validated.

The application of operant psychology to the study of physical activity is a recent phenomenon. Most of the experimentation and research in this area has been completed by Rushall and Siedentop and their colleagues. Except for two texts: The Development and Control of Behavior in Sport and Physical Education by Rushall and Siedentop (1972) and A Behavioural Analysis of Sport by Dickinson (1977), no others with a behavior modification orientation have appeared.

Some references to the behavior modification principles of positive reinforcement and feedback have been made in several coaching articles. Parseghian (1967) outlined a series of recognition and praise situations in college football. Stevens (1974) has mentioned visible incentives in the form of embossed phrases displayed on helmets of his high school footballers. Gentile (1975) stressed the importance of feedback on game and practice

films. Tharp and Gallimore (1976) underscore the importance of film as feedback:

> Inside a football team, the worst time of week is the "Monday murder" when players watch their every move being re-run and criticized on the film of a game that is still alive in each aching muscle. No classroom ever gets that feedback.(p.78)

Coaches have long benefitted from these principles without being fully aware of the field of behavior modification. The first behavior modification articles appeared in the early 70's. Rushall and Pettinger (1970) reported the use of shaping procedure to produce permanent changes in the butterfly technique of an outstnading female swimmer. Siedentop and Rushall (1972) wrote an article for Quest entitled "An Operant Model for Skill Acquisition." McKenzie (1972) studied several reinforcing contingencies and their effect in competitive swimming environments. In a study "Experimental Controls of Inappropriate Behaviors in a Competitive Swimming Environment," McKenzie and Rushall (1973) implemented two experimental conditions. The first was the provision of praise (positive) and reprimand (negative) statements by the coach contingent upon the occurrence of specific behaviors. The second was the playing of a behavior game.

Heward (1976) reported the effects of reinforcement on individual and team offensive production in baseball. A contingency of "hitting for meal money" was set up in which the player with the highest "Efficiency Average (EA)" after a certain amount of games was rewarded monetarily. The experiment was conducted via an ABAB design.

Komaki and Barnett (1977) used a behavioral approach in combining the competitive and the developmental-learning aspects of football in coaching a Pop Warner team. Three frequently run offensive plays were broken down into a series of five stages and then each stage was described in behavioral terms. The players were observed during game and scrimmage situations on the basis of the five stage checklist. The intervention consisted in the presentation and explanation of the checklist as well as "immediate and frequent reinforcement in the form of feedback and recognition for instances of desired play execution."

The athletic area which has had the most concentration of behavioral research is the practice session. The athletic training environment (practice session) is the site of many behavioral techniques. Although most coaches are not familiar with behavior modification, nevertheless, techniques such as positive reinforcement, discrimination training, and stimulus generalization are used everyday in the practice session. Rushall (1971) illustrated how behavior control techniques could be used in supervising, instructing, directing, and manipulating practice sessions in swimming. McKenzie and Rushall (1974) developed reinforcement contingencies to remedy poor and irregular practice attendance and practice work rates in competitive swimming. In their first experiment, a multiple baseline design, absenteeism, tardiness, and leaving early was reduced by publicly marking attendance. A reversal design was used in the second experiment to determine the effects of employing program boards as a means of increasing work output during practice.

> Work rates in eight selected swimmers were elevated by an average of 27.1% when the boards were instituted. Follow-up evaluations showed that the use of the program boards had lasting effects. (McKenzie & Rushall,1974,p.199)

Olson and Heward (1976) found an increase in practice rates in a non-athletic environment. In introductory and intermediate bowling activity classes contingent free line bowling increased practice rates.

Tharp and Gallimore (1976) operationally defined and then recorded a coach's interaction--communication with a team during the practice session. Coach John Wooden's UCLA basketball practices were observed. Ten teaching device categories were operationally defined during the observations. The researchers stressed the educational applicability of Wooden's coaching techniques.

Liskevych and Thorsteinson (1977) have shown how the behavioral techniques of reinforcement, shaping, discrimination, and stimulus generalization can be employed in practice situations.

The author has researched the volleyball practice session (Liskevych, 1977). A vital concern during practice is the amount of active, productive learning that takes place.

In addition, the author has successfully used duration recording, time sampling, and playcheck recording in several pilot studies with volleyball, tennis and football teams. These methods provide valuable data. Increases in the amount of active learning can occur through better practice organization, well-planned drills, and by the use of several behavioral principles.

Another area in which behavior modification can be used is in imagery and relaxation training. Richard Suinn (1976) used behavior modification principles while working with the USA Olympic athletes during the 1976 Winter Games. His visualmotor behavior rehearsal (VMBR) is made up of three steps: relaxation, the practice of imagery, and the use of imagery of strengthening psychological or motor skills.

What are the practical implications of the above research for coaches? As stated by Rushall and Siedentop (1972, p.5), "the specific aim of teaching and coaching should be to develop terminal behaviors that are observable and measurable." Then the key element is the demonstration of the principle that these terminal behaviors can be developed, maintained, and/or changed through reinforcement theory. All of the reported studies have shown this to be, indeed, true.

Coaches can easily learn to modify their players' behaviors by the systematic use of reinforcing contingencies. To achieve this:

1. the advances and success of operant research models in other fields should be constantly monitored, interpreted and applied to the athletic environment;
2. physical education and athletics need to develop their own precise theories, sets of principles, and guidelines for all motor skills and sport techniques;
3. the present coaches must be "educated" to properly use behavioral principles and techniques; and
4. efficient and precise methods must be created for coaches to record behaviors in practice and game conditions. Once the behaviors are recorded, they can be maintained or modified.

In summary, further behavioral research must be done on the application of contingency reinforcement for athletic performance during game and practice situations. The practice time must be efficiently utilized, so that more active learning of skills takes place. Coaches need to familiarize themselves with behavioral principles in order to become better equipped "environmental" engineers. Only then will improvements in human behavior catch up and keep pace with the space age technological advances that are presently found in other areas of the athletic environment.

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Evaluating The Behavior Contract

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Out of the behavior movement have developed several techniques that systematically apply reinforcement in an educational setting. One of the most sophisticated and wide spread of these is the behavior contract. Simply stated, a behavior contract is "...an agreement between the teacher and student that a specific reinforcement will accrue to the student following the completion of a specified task" (Rushall and Siedentop, 1972).

Evidence exists to indicate that the behavior contract makes for a very high level of motivation in the class. Other positive qualities about contract learning are its ability to: (1) facilitate individualized instruction, (2) develop student goal setting ability, (3) develop student responsibility in learning, (4) stimulate student self-direction, and (5) facilitate performance-based education (Lewis, 1974).

Some have proclaimed death to the behavior movement (Alpren and Baron, 1977). It is reasonable that educational innovations that do not work die. Whether or not they work should be based upon objective evaluation. However, with contract teaching, such may not be the case. Many condemn the technique because it does not meet their role expectations, others because of a few negative student opinions.

Alpren and Baron (1977) admit that behavioral techniques are strong in the area of skill development. They insist that the technique is limited in the affective and cognitive domains. Many areas of education, physical education in particular, emphasize skill development. As a result, educators attempting to assess the effectiveness of a behavior contract should: (1) construct the contract properly, (2) understand the instructor's role in contract teaching, (3) understand the student's role in contract teaching, (4) evaluate the contract in terms of the projected outcome, and (5) revise the contract in terms of objective data. This paper attempts to illustrate the effective evaluation of a behavior contract employing objective student data.

Procedures

In order to determine the extent to which the objective or test item analysis technique would evaluate the effectiveness of a behavior contract and provide information for contract revision a previously constructed contract was utilized.

The contract was developed in beginning swimming with the aid of the American Red Cross Instructor's Manual. The objectives were ordered from simple to complex and the criteria were set so as to demand both quality and quantity in performance. There were twenty objectives with a total point value of one hundred. This contract was teacher made without student input and there were no optional objectives. The point total was so distributed that

seventy points would be equal to what the instructor considered a "C" skill level, eighty "B" skill level, and ninety "A."

All students in the class had chosen swimming to fulfill one credit of their two-credit requirements in physical education activities. Students were instructed to move through the objectives at their own pace. They were told that they should start with objective one and make sure that they could complete it at the level specified by the criteria.

It was suggested that peers be used to evaluate oneself. Further instructions indicated that time in class would be used to demonstrate, feedback and drill skills on which individuals needed work. Students were encouraged to ask questions about the objectives and practice during recreational swimming.

Prior to instruction each student was asked to swim one length of the pool using the crawl stroke and one length using a backstroke as a pretest. Students capable of completing this task were exempted from the beginner's course and asked to take an advanced beginning or intermediate course depending upon their skill level. Students completing a part of this task were given credit for the contracts containing the skills involved in that part of the task

Post test consisted of an evaluation of all objectives. Objectives accomplished were recorded at two intervals during the semester, once at mid-semester and once at the end of the semester. In addition, students were asked to answer ten questions on the contract method.

Results

The objective achievement matrix technique was utilized to determine the objective completion rate for each student and for each objective in the pretest and post test performances and comparison was made between the percent correct increase from the pretest to the post test by student and by objective. Subjective data were analyzed according to the suggestions of Singer and Dick (1974).

Table 1 indicates that the students had an average completion rate of .19 on the 20 objectives during pretest. During post test there was an average completion rate of .81. This constitutes an average gain from pretest to post of .62.

Table 2, a summary of performance by objective, illustrates that objectives one through ten were all completed by some students during the pretest while objectives eleven through twenty were completely foreign to all students. Moreover, it is illustrated here that objective one could possible be eliminated, particularly, if one hundred percent of the students are capable of accomplishing this task upon entering the course.

Discussion

Several authors have tested the effectiveness of contract teaching by comparing the differences in grades obtained during the contract method as opposed to traditional techniques (Poppen, 1971; Williams, 1973; Yarber, 1975). It is the contention of this writer that such an evaluation does very little, if anything, in helping the teacher select the technique of teaching best suited for the fulfillment of the course goals. It is a further con-

TABLE 1
SUMMARY OF PERFORMANCE BY SUBJECT

Subject	Percent Correct Pretest	Post test	Gain Pre-Post
1	.20	.60	.40
2	.25	1.00	.75
3	.20	.90	.70
4	.05	.70	.65
5	.20	.95	.75
6	.05	.70	.65
7	.35	.90	.55
8	.15	1.00	.85
9	.45	.95	.50
10	.05	.70	.65
11	.05	.65	.60
12	.20	.85	.65
13	.20	.50	.30
14	.15	.90	.75
15	.45	.85	.40
16	.10	.85	.75
$\bar{X}$	.19	.81	.62

tention that the teacher interested in evaluating the effectiveness of a contract would best serve his purpose if objective or item analysis techniques were employed (Bloom et al, 1971; Singer and Dick, 1974; Callahan and Clark, 1977).

Not only does this type of evaluation yield information about how well the students achieved the goals of the course, it also provides information about where attention should be directed for the revision of the contract.

Results of the evaluation of the swimming contract in this study illustrated that the method was most effective. This is made clear by the fact that the average student had completed eighty-one percent of the objectives at post test and had made a sixty-two percent gain from pretest to post test. It may appear that the evaluation would have been more effective if a comparison using this method were made with the "traditional" teaching technique. The problem in this situation would be in identifying the "traditional" technique of teaching. Many traditional type strategies were employed in the conduct of this contract unit.

The role of the instructor in contract teaching has been misunderstood to be simply as evaluator. On the contrary, the role of the instructor is expanded in contract situations. One should advise, untangle intricacies that may be involved when the student tries to obtain resource materials, help students develop intellectually by tutoring and/or acting as a facilitator as well as serving as an evaluator (Bradley, 1975). Consequently, any comparsion of the traditional technique with the contract method will yield the effectiveness of instruction in that situation without providing any information about how instruction can be improved.

The subjective opinions of the students support further the effectiveness of instruction. Statements about the extent on instruction, the contract method, pretest, and post test were for the most part favorable. Unfavorable statements were in the minority. However, they provided some direction for revision of

instruction.

TABLE 2
SUMMARY OF PERFORMANCE BY OBJECTIVE

Objective	Percent Correct Pretest	Post test	Gain Pre-Post
1	1.00	1.00	.00
2	.75	1.00	.25
3	.62	1.00	.38
4	.06	1.00	.94
5	.56	1.00	.44
6	.24	1.00	.76
7	.18	1.00	.82
8	.18	1.00	.82
9	.12	.81	.69
10	.12	.62	.50
11	.00	.68	.68
12	.00	.87	.87
13	.00	.93	.93
14	.00	.93	.93
15	.00	.75	.75
16	.00	.81	.81
17	.00	.87	.87
18	.00	.43	.43
19	.00	.47	.47
20	.00	.12	.12
$\bar{X}$	.19	.81	.62

Conclusion

The objective or test item achievement matrix employed here and described elsewhere is very effective. In addition, this type of evaluation provides information necessary for improving instruction in the future.

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Accountability in the Gymnasium: A Behavior Analysis Approach

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Accountability, a concept borrowed from the field of business management, involves the systematic analysis of various professions to ensure quality performance of their members. Under an accountability system educators are held responsible for what they do and for what effect their performance has on student achievement. Legal enactments, for example the Stull Act in California, are being implemented to require school districts to institute accountability procedures in regard to the performance of school boards, administrators, and teachers. Physical educators will soon be confronted with having to demonstrate measurable and recognizable results of their teaching, particularly in terms of student physical, recreational, and social skills. At first the concept of accountability may appear threatening, but at second glance it appears as a positive approach to educational management, assuring that specified ends result from specified costs. In a broad sense this is analogous to a contingency management system in which precise goals are established, strategies for change are identified, and consequences are contingent upon the attainment of the goals.

Three years ago at our National Convention in Atlantic City Siedentop (1975) proposed that gymnasiums and playing fields become laboratories and that teachers become researchers utilizing student behavior data to verify the results of instruction. In this presentation Siedentop was developing the groundwork for an applied behavior analysis approach to teaching. Essentially he was promoting grass roots accountability because of the analytic qualities of an approach that has the following features:

1) precise specification of goals that are objectively defined in observable and measurable terms;
2) continuous measurement and recording procedures;
3) evaluation designs that provide evidence not only of the completion of a program but also information regarding aspects of the program while it is being implemented; and
4) systematic application of the principles of operant conditioning, particularly the use of procedures previously demonstrated to be effective in developing and controlling behavior.

The presentations by other speakers today show direct application of behavior analysis techniques in physical activity settings. From these papers it is apparent how accountability results when behavioral approaches are used to change specific student or specific teacher behaviors. The present paper addresses a broad area of concern related to accountability in the gymnasium. This concern is in regard to the responsibilities that a physical education program has to achieve all stated and implied objectives.

In general, physical education programs are promoted with excellent goals in mind. These may include the development of socialization, sportsmanship, self-image, and positive attitudes toward physical activity. Unfortunately, these are broad general concepts and little information is available to show whether these

goals are attained or even if they are promoted in programs. Programs that are accountable are able to do what they are purported to do. Broad overall goals are desirable but it is the breaking down of a general goal into specific short term achievable objectives that promotes accountability. Rather than an overall goal occuring haphazardly, short term objectives can be taught systematically and assessments can be made to determine whether or not progress toward the goal has been made.

A model for organizing to teach a goal having complex social values has been developed by Locke (1977). This model has five stages: (1) verbally defining the concept; (2) listing specific observable behaviors that embrace the concept and those that do not; (3) identifying conditions that help people acquire the concept; (4) creating instructional strategies to teach the concept; and (5) creating strategies for measuring and evaluating results. Locke and his undergraduate students at The University of Massachusetts have applied the first four stages of the model to the development of sportsmanship, one complex social value promoted by most physical education programs. Further developments of the model, particularly application to live settings, should prove exciting to those concerned with developing social values.

Some procedures for attaining broad goals have been implemented in schools. For example, Austin and Brown (1978) reported a procedure to systematically promote social development in elementary school children through game play. These authors developed check lists consisting of categories for positive behavior development such as enthusiasm, positive reaction to officials' decisions, positive reaction to losing, and sharing responsibilities. Each category was defined in terms of behaviors that could be easily identified. For example, negative reactions to officials' decisions included kicking the ground, throwing down sticks, moaning and groaning in disagreement with the call, and arguing with the referee. Points were awarded or removed contingent upon positive or negative social behavior on an team basis. After each game feedback was provided to each team and a trophy was awarded monthly to the team with the best social score. Similar procedures are being used to promote socialization in physical activity settings at St. Andrews Elementary School in Austin, Texas. However in this system, points are earned throughout the class period on an individual basis, and free time on Fridays is used as a reinforcer (Lambdin, 1978). Both of these school systems have socialization as a goal, but rather than have it occur haphazardly, steps are taken to ensure that specific social behavior actually result from planned interventions.

In addition to socialization, physical education curricula often promote another broad based goal, the development of positive attitudes toward physical activity. This is a complex notion and programs have rarely been held accountable for its attainment. Junior and senior high school students readily point out events that cause them to dislike physical education classes. These include inactivity, such as standing in line and listening to lectures, doing the same activity day after day, being in overcrowded and poorly equipped gymnasiums, and receiving little or no instruction in the activities they are supposed to be learning. But their chief displeasure is in regard to the use of aversive control techniques commonly used to force them to participate. These include the threats and ridicule of teachers, pressure from peers, low grades, poor showing in competition, and extra work such as

push ups and running laps. Favorable attitudes about participating in physical activities are not likely to be enhanced under these conditions.

Physical education classes conducted under aversive conditions will cause students to avoid the situation (absenteeism, tardiness) or escape from it (disrupt the situation, leave). From a technical viewpoint, aversive control procedures have undesirable side effects, including the tendency for associated events, including the total environment, to become aversive (Staats, 1975). Unfavorable attitude toward physical education classes are likely to generalize and future participation in physical activity is placed in jeopardy.

A recent social-behavioral theory for human behavior that encompasses attitude development has been proposed by Staats (1975). His theory involves a mediational A-R-D system in which stimuli have three spearate but related functions, aroused-reinforcer-directive (A-R-D). Very briefly, the arousal function of stimuli is highly central to attitude and asserts that an event may have associated with it positive or negative emotional properties. Positive attitude would accrue to an event that is paired with positive reinforcement and negative attitude would accrue in a setting involving aversive stimuli. Attitude could be viewed as an approach-avoidance tendency toward an event.

Assessment of attitudes toward physical activity could involve the direct observation of student behavior under free choice conditions, such as when grades and other extrinsic consequences are not forcing participation. When this is not possible student self-reports serve as a practical and reliable substitute. At least three different pencil and paper techniques adapted to the developmental level of the students would be used. First, attitude could be estimated by having students rank-order a set of different activities. Second, students could be asked to estimate their approach or avoidance tendencies toward particular activities. For example, they could indicate whether they engage in basketball, badminton and other sports during their free time. Third, students could be asked to report how they feel when engaging or asked to engage in some type of activity. By utilizing the results from the self-report data, teachers can determine the success a program is having in developing students' attitude toward physical activity and can make overall program adjustments or specific modifications for certain individuals. Self-report data can be evaluated through behavioral research designs much in the same manner as direct observation data. Multiple baseline designs across settings offer the most feasible method for assessing attitude change in physical activity enviornments.

Quite frequently direct observation data and self-report data can be combined to evaluate programs. This procedure was followed in evaluating the development of a behaviorally-based teacher education center for physical educators at The Ohio State University (McKenzie, 1976). The project involved a peer assessment model to develop teaching skills. Student teachers, assigned in pairs, observed, analyzed, and provided feedback to their partners. Direct observation data were collected on the student teachers and pupil behavior. Changes in these behaviors were assessed throughout the project, which involved the student teachers participating in a behavioral workshop and attempting to implement behavioral strategies in their own classes. In addition, consumer satisfaction data were solicited from all "clients", including school

administrators, regular classroom teachers, as well as the student teachers and their pupils. This project also provides an example of how a teacher training institution can become involved in assessing the accountability of it's own programs.

Any discussion on accountability in physical education would be remiss if it failed to mention recent developments brought about by Public Law 94-142, the Education for All Handicapped Children Act. The rules and regulations for implementing P. L. 94-142 boost the prospects of accountability in physical education tremendously. For example, the rules require that a written individualized education program (IEP) for each handicapped child be developed and reviewed annually by the child's parents, teachers, and school board representative. An IEP must include:

1. A statement of the child's present level of educational performance;
2. A statement of annual goals, including short-term instructional objectives;
3. A statement of specific special education and related services to be provided to the child, and the extent to which the child will be able to participate in regular educational programs;
4. The projected dates for initiation of services and the anticipated duration of the services; and
5. Appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether the short-term instructional objectives are being achieved. (Wessel, 1977, p. 3-4).

A preservice and inservice training program for the implementation of PL 94-142 by physical educators has already been developed and field tested. This program, Project I Can, funded by the Bureau of Education for the Handicapped and developed under the direction of Janet Wessel at Michigan State University, provides an instructional system that is individualized, based on specific behavioral objectives, provides for the sequential development of skills, and allows for replication and cost effectiveness comparisons (Wessel, 1976; 1977). Program materials include diagnostic assessment instruments and perscriptive instructional activities as well as individual and class score sheets which permit continous evaluation of progress. Self monitoring forms are also provided to help teachers evaluate their ability to implement the program. Physical educators at all levels, whether they deal with handicapped students or not, are advised to take an indepth look at the accountability model of I Can.

An important aspect of the I Can model is the sharing of the responsibility for student growth. Although this paper has focused on the physical education teacher as the main figure in establishing accountability in the gymnasium, it is not reasonable for a teacher to be held responsible until it has been shown that the program goals can be achieved under proper management. The reality of the situation is that many desirable and anticipated outcomes of physical education cannot be engendered by a teacher given the time and environmental constraints in which he must work.

It is also reality that programs are beginning to feel the economic crunch. Program survival depends upon the support of the public, school administrators, and the students themselves. Continued support will be contingent upon the demonstration of goal attainment. Programs based solely on broad general goals will have difficulty establishing accountability. Applied behavior analysis is beneficial in demonstrating changes in physical skill development and changes in other areas, such as socialization, providing these concepts are identified in precise behavioral terms. The collection of self-report data indicating consumer satisfaction with programs is also a useful assessment procedure. However to become accountable, many programs will have to eliminate their Toyota policy, "you asked for it, we got it," and focus on the second rule of contingency management, "think small". By concentrating resources in a single area, perhaps that of developing physical skills, physical educators will be able to demonstrate genuine valuable accomplishments.

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Behavioral Self-Modification In Teacher Education

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Behavioral self-modification, as the term implies, involves the self-application of behavior principles to affect change in one's own behavior. This approach to behavior change not only has the potential effect of accelerating the change process; it also provides an opportunity for the person to be the significant change agent thereby fostering increased feelings of self-reliance and self-respect.

REVIEW OF LITERATURE

The self-application of behavior principles to regulate one's own behavior in educational settings has not been well documented. Despite the paucity of research in this area, there are studies which have examined self-modification techniques in therapeutic environments. The prearrangement of stimulus cues by the individual was one of the first self-modification approaches examined. Stuart (18) reported unprecedented degrees of success when obese subjects applied stimulus control to their own behavior by altering undesirable antecedent stimuli. Additional studies have substantiated the effectiveness of this self-change technique (14, 15, 17).

Another major self-modification strategy which has empirical support is known as "behavioral programming" (11). This technique involves the use of self-imposed contingencies to modify one's own behavior. Several studies have demonstrated the efficacy of self-administered reinforcement (1, 7, 8, 10, 12).

Certain undesirable behaviors appear to be highly correlated with identifiable thoughts and/or emotional responses (19). Covert self-modification strategies are employed to alter both overt and other covert behaviors (thoughts and feelings). Several investigations have illustrated the effectiveness of self-applied covert techniques (2, 5, 6, 13).

When self-modification is studied as a total process in naturalistic settings, rarely does it involve a single strategy. Several studies have demonstrated the usefulness of comprehensive self-modification programs involving several behavior techniques applied simultaneously (3, 4, 16).

The studies reviewed in this paper focused on the "treatment" of specific problems. The present investigation, however, focused on training rather than treatment. The emphasis was placed on teaching individuals strategies for understanding and controlling a wide variety of their own behaviors. This was accomplished via a self-instructional modularized mini-course in behavioral self-modification. It was not only a course about behavioral self-modification--it was an experience in behavioral self-modification.

METHODS AND PROCEDURES

Subjects

The subjects in this study consisted of fifteen sophomore physical education majors at The Ohio State University who expressed a desire to learn self-modification techniques.

Modularized Mini-Course

The modularized mini-course was structured so that students would: (a) increase their understanding of the factors that impinge upon their behavior; (b) apply specific principles of behavior modification to their own lives by developing and implementing personal self-change programs as part of the course; and (c) learn broad-based survival skills which are generalizable to a wide variety of behaviors.

The first objective was accomplished via a package of materials which contained relevant readings on the topics of behavior control and self-modification. The instructional package also contained enabling activities designed to evaluate the students' abilities to handle the concepts effectively. Students completed this portion of the course during the first three weeks of the quarter.

The second, and major, portion of the course involved a personal self-modification project. Students were instructed to select and focus upon personal problem behaviors which could directly or indirectly impact on their teaching behavior. With the assistance of the investigator, the subjects designed self-modification projects which involved the self-application of several behavioral techniques. The specific techniques developed and carried out by class members included identifying specific target behaviors, setting goals, self-monitoring, and implementing a packaged intervention. Terminal behavioral objectives were stated in terms of a percent increase or decrease over the baseline rate which was established during a one- to two-week baseline period. Following the collection of baseline data, they instituted the packaged intervention which consisted of: (a) altering antecedent stimuli (setting events); (b) establishing effective behavioral consequences; (c) focusing on behavioral contingencies; and (d) applying covert self-control techniques to their behavior (19).

Analysis and Experimental Design

The purpose of this investigation was to train a group of individuals in empirically-based procedures for managing their own behavior. Because the primary emphasis in this study was the individual, rather than the group, within-subject or single organism designs were used to analyze the data (9). With the use of these designs, data are not subjected to statistical analysis. Rather, causality is demonstrated when behavior changes consistently and predictably with changing contingencies. Each subject's data were analyzed via one of the three single organism designs. A multiple baseline design (9) was used with subjects who chose to modify the same behaviors(s). With subjects who chose to modify behaviors which required gradual shaping over a period of time, a changing criterion design (9) was used to analyze the data. The third type of experimental design used was an ABA reversal design (9). During

A, baseline data are collected and recorded, followed by B, the intervention. Removal of the intervention contingencies, C, should result in a return to baseline rates. Significance in applied behavioral research is not based on an alpha level or probability. A more important concept of significance in intensive studies involving self-modification is the personal and social usefulness of changes realized. Subjects in this study established terminal goals which enabled them to evaluate the significance of the changes they noted. Changes were regarded as significant by the investigator if they matched or exceeded the terminal objectives set by the subjects.

RESULTS

Table 1 provides descriptive information on each of the self-modification projects conducted. The mean changes over baseline were calculated from the students' self-monitored data and expressed as percentages. Students' satisfaction with the outcomes of their projects is also provided. An examination of Table 1 reveals that 10 of the 15 subjects achieved their terminal levels of behavior, while the remaining five were more than 75 percent successful in thie regard.

Each of the 15 subjects completed an evaluative questionnaire at the completion of the self-modification projects. This was administered for the purpose of analyzing various aspects of the course and the self-modification projects. In general, all subjects felt that the changes they realized were of practical significance to them personally. As a result of their achievements, 13 of the subjects reported that they regard themselves as being more in control of their own behavior than they did prior to the course. Fourteen subjects felt very confident that they could design and implement another self-modification project involving another behavior problem. This statement is highly significant because one of the purposes of the course was to teach the subjects broad-based behavior analysis skills which they could apply to a variety of problems.

DISCUSSION

Since self-modification skills are potentially generalizable, they offer the prospective teacher a useful tool for alleviating both existing and future behavior problems related to teaching, family, personal habit/health, and social/interpersonal relationships. The inclusion of such a course in the preparation of teachers, especially physical education teachers who are highly visible models for the students with whom they come into contact, appears to warrant consideration.

TABLE 1
SELF-MODIFICATION PROJECTS AND OUTCOMES

SUBJECTS	TARGET BEHAVIORS	BEHAVIORAL GOALS	PERCENT CHANGE OVER BASELINE	SELF-SATISFACTION WITH CHANGE
1	Eliminate Fingernail Biting	Decrease by 100%	94% Decrease	Yes
2	Eliminate Smoking	Decrease by 100%	100% Decrease	Yes
3	Improve Self-Concept			
	a. Decrease Self-Criticism	Decrease by 50%	35% Decrease	Somewhat
	b. Increase Self-Praise	Increase by 50%	36% Increase	Somewhat
4	Improve Self-Concept			
	a. Decrease Self-Criticism	Decrease by 50%	53% Decrease	Yes
	b. Increase Self-Praise	Increase by 50%	27% Increase	No
5	Improve Eating Habits			
	a. Decrease Junk Food	Decrease by 50%	81% Decrease	Yes
	b. Increase Appropriate Food	Increase by 50%	30% Increase	Somewhat
	c. Decrease Caloric Intake	Decrease by 33%	59% Decrease	Yes
6	Improve Eating Habits			
	a. Decrease Junk Food	Decrease by 50%	95% Decrease	Yes
	b. Increase Appropriate Food	Increase by 50%	83% Increase	Yes
	c. Decrease Caloric Intake	Decrease by 33%	45% Decrease	Yes
7	Decrease Caloric Intake	Decrease by 33%	34% Decrease	Somewhat
8	Decrease Caloric Intake	Decrease by 33%	31% Decrease	Yes
9	Increase Study Time	Increase by 100%	147% Increase	Yes
10	Increase Study Time	Increase by 100%	155% Increase	Yes
11	Increase Study Time	Increase by 100%	179% Increase	Yes
12	Increase Study Time	Increase by 100%	226% Increase	Yes
13	Increase Study Time	Increase by 100%	156% Increase	Yes
14	Increase Study Time	Increase by 100%	104% Increase	Yes
15	Increase Study Time	Increase by 100%	169% Increase	Yes

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Emphasizing Teacher Behavior As An Educational Tool

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Education has placed emphasis on many variables in the schools such as facilities, equipment and curriculum, but an additional aspect has received a great deal of research attention over the last decade. This attention concerns the effects of teacher behavior upon the academic and social behavior of students.

This psychological concept is termed vicarious reinforcement, but is more commonly called modeling. Modeling is basically the process of an observer acquiring another person's behavior as a result of perceiving that person as successful and being reinforced for what they do.

Modeling has been used to change a variety of academic and social behaviors such as children's play patterns (Marshall & Hahn, 1967), student-teacher behaviors, (Rife, 1973), moral judgment orientations (Bandura & McDonald, 1963) and innovative and novel behaviors (Bandura, Ross & Ross, 1963). Ringer (1973) trained a fourth-grade teacher in the use of tokens and verbal reinforcement by an experienced "token helper" who modeled the procedures in the classroom. This procedure decreased the disruptive behavior of 10 pupils. When the token helper withdrew from the classroom, the teacher managed the token system and maintained disruptive behavior at lower than baseline levels. Bondy and Erickson (1976) compared the effects of a token reinforcement system, a Trainer-Model procedure, and a combination of the two for increasing the rate of questioning in the classes of four retarded children. The modeling procedure had only minimal effects upon the rate of question-asking, while both the Model plus Token and the Token groups showed significant performance increases. The only significant difference between the Model plus Token and the Token groups was a faster rate of increase early in the first training periods for the Model plus Token group. This difference suggests a facilitory effect of modeling procedures on reinforcement contingencies. The thrust of the modeling research strongly suggests that modeling cannot be left to a random approach but is more effective when applied in a systematic manner.

The first step in the modeling procedure is to have a clear and defined goal of the behavior students are to acquire. Cooperation in a gymnastics class can be better defined as the number of times a student "spots" another while working a particular piece of equipment.

The second step is to define specific behaviors or actions which will lead to a target behavior. Students who have to rotate as spotters or have to spot before they can perform a skill have a much higher probability of increasing their spotting behaviors than students allowed to talk to other students, or allowed to move through a skill without also having to help others perform that skill.

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The next step is the crucial one of selecting a model to present. Bandura (1969) suggests that a model be (a) successful, and (b) similar to the students observing the model. Being successful does not mean necessarily that the model be an expert or a high-level competitor. The reinforcement the model receives, either from their actions or a teacher's comments, can deem a model successful in the eyes of an observer. Similarity to the observers can be either a peer (Bandura & Menlove, 1968) or an expert performer (Grusec & Mischel, 1966).

Despite the type of model used, it is important that students progress from simple to more complex types of behavior. To present a total move to a novice can be confusing (Bandura, 1969) and it is crucial to have an expert model demonstrate slowly, or in the case of film loops, have slow motion viewing available.

Another modeling consideration is to allow for practice time once the model has been presented. The teacher must make every effort to provide adequate space, time, and equipment for student practice. Equally important is that student practice be given feedback and reinforcement if the modeling procedure is to be effective.

A final consideration as used by Goodwin and Coates (1976) is for practice outside the classroom. If outside-the-classroom experiences are not deemed successful by students, the teacher may have to remodel the target behaviors in question. In physical education, an example could be to encourage students to participate in an intramural or varsity sport as a result of the modeled behavior they acquired in a physical education class.

A recent study on modeling (Rife, 1977) concerned the acquisition of evaluation behaviors by three randomly selected students from a physical education major's volleyball skills class. The study was conducted in a fall and spring semester of 14 weeks each. Some 40 students were evaluated over 31 performance items during each semester. The class policy regarding evaluation consisted of having students evaluate their peers once they had first successfully passed the skill themselves. The criteria for each skill was explicit and performance success was a yes, not-yet format of achievement. If the student failed the format, they practiced and returned to attempt the skill again. With no modeling intervention by the instructor, there was very little exhibition of peer evaluation behaviors. The entire evaluation process took 11 weeks to complete in the fall semester.

During the experimental semester in the spring, three randomly selected students were given a modeling intervention by the instructor that consisted of demonstrating the skill, explaining the testing situation, reviewing the performance criteria, and emphasizing the cues and discriminative stimuli associated with the correct response. Intervention schedules and reliability sessions all conformed to the procedures of the single-subject research design or applied behavior analysis (Hersen and Barlow, 1976).

The effects of the modeling intervention demonstrated increases in the evaluation behaviors of the three student subjects (See Figure 1).

A corresponding result was a reduction in the total amount of time necessary to completely evaluate the performance skills of the entire class (See Figure 2).

This "pyramid effect" of modeling behaviors for evaluation is termed "internal proctoring" regardless of whether the evaluation information is modeled or presented in verbal or written form. Training peers to evaluate peers has been show to be effective (Sherman, 1971) yet presents some anxiety behaviors for teachers concerning the notion that students may not adhere to performance criteria when evaluating their friends.

A class contingency can be made to reduce such anxiety. A class policy reserving the right to evaluate, by the same criteria, any skill a student has marked as evaluated, can reduce instances of "peers taking care of peers". In many cases, the majority of major students are glad to have the opportunity to practice some evaluation skills and do so in a professional manner.

In summary, a remark should be made concerning the utilization of the modeling principle. Several research studies (Bandura & Menlove, 1968; Kiser, 1969; and O'Conner, 1969) have suggested that the teacher does not have to be the model in order for students to acquire certain skills. Teacher modeling should be encouraged as a positive and supporting factor of "the hidden curriculum." Being skilled has never been mentioned as detrimental for good teaching, but being skilled is not the only requirement. Being a competent teacher/model can suggest to students that being skilled means a game can lead to more success and more fun. It can suggest to the student, "I enjoy this game, this activity is a part of my life." The teacher should be a doer, and demonstrate that activity is a part of their lifestyle. This message will not occur from the teacher who just sits and merely talks about physical activity.

Physical educators and coaches should be strongly urged to utilize the modeling concept for effecting changes in the skill and social behaviors of their students and players. It should be applied in a direct and systematic manner when planning any learning sequence. There is no time like the present for teachers and coaches to become the best model available.

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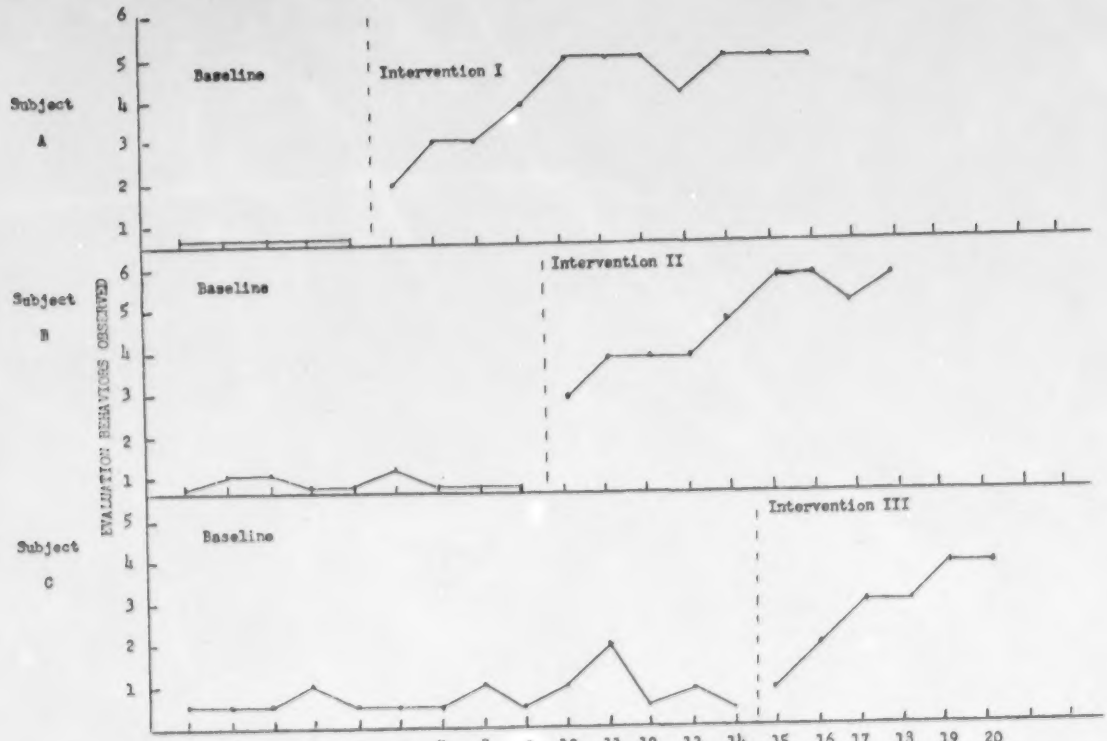
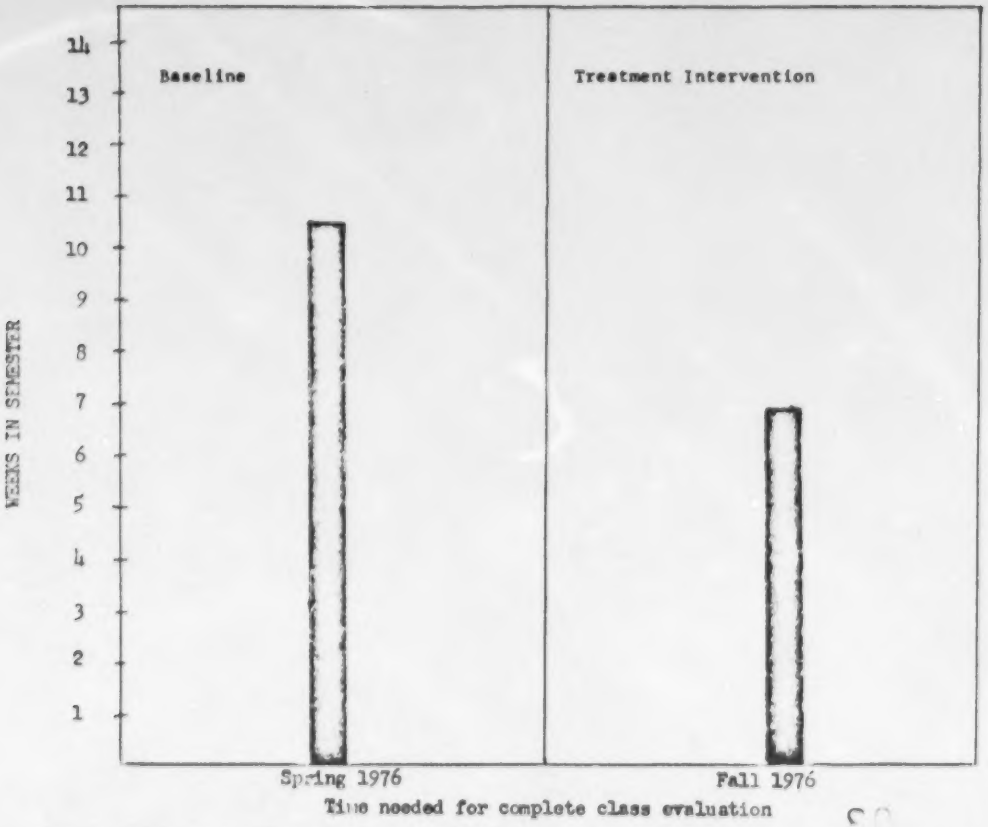


* = Reliability Check

Figure 1


Baseline
Treatment Intervention
WEEKS IN SEMESTER
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Spring 1976
Fall 1976
Time needed for complete class evaluation

Contingency Management Learning Systems

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A teaching and learning method or strategy that has had an impact upon physical education environments in recent years is called contingency management. This technique is based on the application of operant psychology principles and the work of Harvard psychologist, B. F. Skinner. Contingency management models have been tested in a variety of environments including: mental hospitals, drug clinics, juvenile homes, industrial settings, home settings, and educational settings (McKee, 1971; Darst and Whitehead, 1975).

Contingency management is a system focused on managing the motivation of students. Motivation is obviously an important variable in the teaching-learning process. A contingency is a relationship between a behavior and the consequence of the behavior. In this model, the student should understand exactly what he/she is supposed to do, the conditions under which he/she should do it, the acceptable criteria for evaluating the performance, and the rewards available for specific levels of performance. In many situations, teachers have been deficient in the management of the contingencies available in their particular environment.

Rushall and Siedentop (1972) have suggested the following guidelines for developing contingency management systems in physical education: 1) Define desirable student behaviors in observable, measurable terms, i.e., twenty push-ups in one minute, a five foot high jump, and an eleven second 100 yard dash; 2) Clearly specify the terminal or final performance; 3) Reinforce only the target performance, i.e., strength, speed, endurance, accuracy, or a combination; 4) Clearly state the contingency so that everyone knows what is expected of them; 5) Make sure that the contingency is fair and can be obtained with a reasonable amount of effort; 6) Performances should be arranged in a progression so that students can experience success quickly and then proceed to more difficult tasks.

These types of learning systems can be developed and utilized in any type of physical education environment, i.e., elementary, junior, and senior high activity classes, college activity classes, and academic or theory classes. Instructors must simply identify the desirable student behaviors, the effective reinforcers, and then arrange the environment so that students will work toward the achievement of the reinforcers. Motivation should be built into the system because students know ahead of time what is necessary to earn the desirable reward. Efforts should be made to make the system a positive or "fun" approach to teaching and learning.

Contingency management systems have been studied in a variety of methods. They have been used as independent variables focused on changing or modifying the following classroom behaviors: disruptive behaviors, attentiveness, standardized test performance, biology, reading, math, and spelling performance. In the physical education area, contingency management has been used to affect physical skills, strength, power, work rates, teaching behaviors, and coaching behaviors. These methods have been compared to "traditional" techniques of teaching and to "movement" approaches to teaching.

Devising and Implementing Contingency Management Learning Systems in a School Environment

This writer has been involved directly with the development and field testing of several contingency management learning systems both as a teacher and as a college supervisor of several student teachers that used a contingency management approach (Darst and Whitehead, 1975; Darst and Burr, 1976; Darst, 1976 and Darst and Darst, 1977). These systems have been used at several age levels, i.e., elementary, junior high, senior high, and college age and with different physical activities, i.e., gymnastics, skin diving, and volleyball. The following two units will be discussed: 1) a 5th grade gymnastics unit and, 2) a 7th and 8th grade skin diving unit. An analysis will be presented after the two units are discussed.

Wind Gap Elementary School

A contingency management system for a fifth grade gymnastics unit was devised and implemented in Wind Gap Elementary School, located in Wind Gap, Pennsylvania. A student teacher from East Stroudsburg State College, the college supervisor, and the cooperating teacher from Wind Gap were all involved in the project.

The project included seven learning areas dispersed within the multi-purpose room. The following equipment was utilized in each learning area: 1) tumbling-four Nissen panel mats arranged in a square; 2) uneven parallel bars-one set of converted parallel bars; 3) parallel bars-one set of four-foot metal parallel bars; 4) still rings-two metal rings suspended on chains from the basketball rim; 5) balance beams-one floor-height wooden beam and one three-foot metal beam; 6) vaulting-one Swedish vaulting box (no Reuther board); 7) horizontal bar-one four-foot metal bar.

The student teacher, supervising teacher, and cooperating teacher collectively developed a list of skills that could be learned at each piece of apparatus. Performance objectives were then developed for each skill and arranged in a progressive manner from basic skills to advanced skills. Each performance objective included: the starting position, the skill to be performed, the end position, and a simple name for the skill. Each performance objective was numbered in order to speed up the evaluation process. The following performance objectives are an example of those used for the parallel bars:

1) Stand at the end of the bars and grasp both bars with your hands on top of the bars. Jump up so that your arms are now straight. Walk down the bars moving one hand at a time (hand walking). 2) From a standing position at the end of the bars with both hands on top of the bars, jump up until your arms are straight. Now hop down the bars by moving both hands at the same time (hopping travel). 3) Jump to a "cross-arm support" (both arms straight with your body between the bars) and swing your legs forward, straddling them and putting them on top of the bars. Now lean forward and place your hands in front of your legs. Swing your legs down off the bars and then up in front again--keep repeating this the length of the bar (traveling). 4) Jump to a cross-arm support (both arms straight) and swing your legs forward and backward, showing control and trying to swing your legs high both ways (leg swings). 5) Place your upper arms (by your shoulders) on top of the bar and swing your legs forward and backward. Hold onto the bars with your hands for balance (upper arm support swings).

Performance objectives similar in style were used for the other pieces of equipment.

Formal reinforcement consisted of a system of charts for each of the seven learning areas. Each chart consisted of the students' name and the number which corresponded to each performance objective. Figure 1 represents the type of chart used for the parallel bars:

(3) Parallel Bars (3)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Name:															

Figure 1 - Evaluation Chart - Parallel Bars

As students completed the specific performance objectives, they received a colored star which was placed on the chart in the corresponding box. The student worked on their skills with a partner and moved through the performance objectives at their own rate. The teachers stressed safety continually and encouraged students to attempt the skills only with proper spotting available.

Stroudsburg Middle School

A contingency management unit for skin diving was developed for 7th and 8th grade students at Stroudsburg Middle School located in Stroudsburg, Pennsylvania. This unit was used with those students that had previously completed the American Red Cross (ARC) requirements for the advanced swimmer level. Contracts were focused on the following four areas: 1) face mask, 2) fins, 3) snorkel, and 4) combination skills.

The following is the face mask contract:

Mark the date that each of the performance objective is met.

__1. Adjust face mask strap to your head size. __2. Apply saliva to face mask--rub all around face plate, DO NOT RISE (For preventive). __3. Fill mask with water and hold to face without strap. In chest deep water, go under in vertical position and by tilting head from chest backwards push against upper edge of mask and exhale gently. Completely clear mask 3 out of 5 attempts. VERTICAL TILT. __4. Fill mask with water and hold to face without strap. While in a horizontal position, roll onto left shoulder pushing gently with right hand against side of mask and exhale gently. Completely clear mask 3 out of 5 attempts. HORIZONTAL ROLL. __5. Repeat no. 3 with strap attached to back of head. __6. Repeat no. 4 with strap attached to back of head. __7. In 6 feet of water, submerge to bottom of pool, by pinching nostrils, gently exhale into mask until you feel your ears equalize. Successfully equalize pressure in 4 out of 5 attempts. __8. In 9 feet of water repeat no. 7. __9. Repeat no. 3 in deep water. __10. Repeat no. 4 in deep water. __11. Throw mask into shallow water, submerge and put mask on. Complete vertical tilt clear in one breath, 4 out of 5 attempts. __12. Throw mask into shallow water, submerge and put mask on. Complete horizontal roll clear in one breath 4 out of 5 attempts. __13. Same as 11 in 6 feet of water. __14. Same as 11 in 9 feet of water. __15. Same as 12 in 6 feet of water. __16. Same as 12 in 9 feet of water.

These specific contracts were explained and distributed to those students that had met and completed theARC advanced swimmers level of mastery. One-fourth of the pool was made available for these students to practice and complete the contracts. Students worked with partners and progressed through the contracts at their own rate. At the end of each class period, students dated and initialed the specific performance objectives that had been completed and returned the contracts to their respective instructor. The students working on the contracts were not under the direct supervision of an instructor because normal organized instruction was occurring in the remaining three-fourths of the pool with students working on their respective ARC swimming level. Reinforcement consisted of marking off the accomplished objectives and the freedom of working with another student without the direct supervision of the teacher.

Analysis of the Two Systems

After utilizing the contingency management model in several different classes that ranged in size from ten to thirty-six people, the following advantages appear to be in order: 1) The students knew exactly what was expected of them; 2) The students seemed highly motivated by the course format; 3) The unit format provided all students with some success as well as a challenge; 4) The students were able to progress at their own rate; 5) The students were able to select their own learning activities and sequence of activities; 6) The students were forced to accept a degree of responsibility for learning; 7) The unit format emphasized learning rather than teaching; 8) The unit format allowed students to work together or individually depending on their preference; 9) The unit format reduced the amount of in-class time for managerial activities and increased the teacher's time spent as an agent of feedback; 10) The unit format enables administra-

tors, supervisors and parents to know exactly what was expected and accomplished by the students.

The author feels that some people might consider the following as disadvantages: 1) The performance objectives are time-consuming to write and they need constant revision and up-dating depending on the group you are working with; 2) The teacher may have to spend a considerable amount of time evaluating if the class is quite large; 3) Some students may have problems interpreting the performance objectives and may be continually asking for teacher assistance; 4) Some students may take advantage of their freedom and behave inappropriately; 5) The teacher has to spend time developing instructional devices and media, i.e., court markings, hanging ropes, and loop films; 6) The teacher has to spend time keeping accurate records on student achievement.

In almost all cases, students admitted that they enjoyed being involved in this model of instruction. The teachers involved in these units seemed to be highly motivated in this format. Throughout the physical education literature, a case has been built for improving students' and teachers' attitudes towards the teaching/learning process. It appears that this has been accomplished in these teaching/learning situations. The students and teachers not only enjoyed the activities of gymnastics and skindiving, but also the teaching/learning process in general. Hopefully, these students developed "approach tendencies" for the specific activities and the overall learning process.

Contingency management may not be panacea for all of the ills of your particular situation but it may offer some advantages for you and your students. It appears to be an effective tool for improving the teaching/learning process. Continued research efforts in this area are necessary to demonstrate the value of the model, for recognizing and understanding possible limitations and for making necessary changes.

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Innovation in Girls' Physical Education In New Trier Township High School, Winnetka, Illinois 1930 to 1960

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The term innovation, within the last decade, has become something of a household word. It has been considered synonymous with invention, discovery, experiment, adaptation, change, and novel idea. Today, conferences on almost any subject from industry to education demonstrate a preoccupation with new ideas, new methods, new programs. One has only to turn to such current publications as Toffler's Future Shock (1974) to have reenforced the realization that, although change has always existed, the processes truly are accelerating.

The purposes of this study were to identify innovations in a selected secondary school girls' physical education department; to analyze the procedures by which these innovations were implemented; and to determine the roles of particular individuals or groups in the process of change. The following definition by Miles (1964) was used for the term innovation, i.e., a deliberate, novel, specific change which is thought to be more efficacious in accomplishing the goals of a system.

Significance of the study is that since the late fifties there have been numerous federal programs and much public support for innovation in many subject areas, but no studies were found which identified innovative practices in the field of physical education for girls in the secondary school, nor studies which contributed significant knowledge to the implementation of innovation in this area.

A literature review included school and community environments, innovations and innovators, barriers to change, and planning and effecting change. The following hypotheses were examined:

1. A community which tends to be propitious to implementation of innovation will manifest the following characteristics: (a) most adult residents have education beyond high school, (b) there is perceptible interest in education, (c) most residents own their own homes, (d) there are major religious sects and races represented, (e) there is increasing growth and property values are increasing, (f) there is competition with similar rival communities for recognition as being superior.
2. The organizational climate of a school which tends to be propitious to implementation of innovation will manifest the following characteristics: (a) there is a free flow of information, (b) there is an expectation of change which may develop into a chain reaction, (c) there is competition with rival schools for recognition as being superior, (d) the daily schedule allows time for processing of ideas, (e) there is not complete freedom from internal friction, (f) the administrator has been brought in from outside the immediate social system, (g) most staff members have education beyond a bachelor's degree, (h) most teachers at the time of employment are under thirty

years of age and have had previous teaching experience, (i) eighty five percent of the students are college preparatory oriented, (j) I.Q.s of most students are above the national average.
3. An innovative Physical Education Department will have an administrator who manifests the following characteristics: (a) a chairperson with vigorous leadership ability, (b) a chairperson with professional as well as social contacts outside the immediate social system, (c) a chairperson who is practical as well as persistent in pursuing goals.

Criteria for Selection of Innovations:

Practices originating in this particular school; practices preplanned with the intent of accomplishing educational goals more efficaciously; new practices which changed the existing order either spatially, temporally, or both; successful practices as judged by retention of the practice for five years or longer.

Assumptions:

It was assumed that innovation was not confined to the Department of Physical Education for Girls; that particular individuals were influential in the process of implementing innovation; and that particular facilities and equipment contributed to the variety of innovations instituted.

An historical description of the New Trier Township and the origin and development of New Trier Township High School were presented with a prologue of the first twenty-eight years of the school. The period 1930 to 1960 was examined by decades thus permitting chronological treatment of the data and relationships of particular historical periods.

A case study approach was used for the study of innovation at New Trier for as Miles (1964) succinctly stated:

> In the development of theoretical understanding there is no substitute for the close examination of concrete, particular situations. If we do not have a knowledge of acquaintance with the phenomena of interest, generalizations are bound to be naive and theory shallow.

Reasons for choosing New Trier were its prominence in the field of education; its excellence (Conant, 1961) as being one of the nation's "lighthouse schools" lighting the way toward educational advancement; the writer's familiarity with the school, and acquaintance with persons who agreed to lend invaluable historical documents to this endeavor. A key person consulted in this investigation was Iris Boulton who retired after 43 years at New Trier including tenure as chairperson of the Department of Physical Education for Girls from 1935 to 1969 and as sponsor of the Girls' Athletic Association from 1927 through 1954.

New Trier served a group of suburban towns and villages located just north of the city of Chicago along Lake Michigan. Its proximity to Chicago proved to be a natural attraction for many professionals. The enrollment grew from 72 in 1901 to about 4000 by

the late fifties. In 1965 the school was divided into two campuses. This study concerns the original school and campus.

In order to compile a list of innovations, the following sources were used: "A Few Highlights of My Career at New Trier," by Iris Boulton; Questionnaires sent to suburban school representatives who chaired departments similar to that of New Trier; New Trier Student Handbooks, and Iris Boulton's personal collection of records.

An opinionnaire listing these innovations was sent to 106 individuals formerly or presently affiliated with New Trier. They included present and former school board members, physical education staff, school administrators and students, primarily those who had been active in GAA.

Views were solicited by requesting a rank ordering of the innovations with the option of adding to the list. Returns represented four categories: curriculum, department work, special events, and GAA. Those receiving the greatest recognition were examined in depth by means of personal interviews with six former staff members. An examination of records of the school and township was made to provide a general description of the community and school. A prologue provided information on the origin of the school.

NOTABLE FOUNDATIONS 1901-1929

A history of the GAA (Huff, 1935) related that in 1903 the girls' basketball team, using boys' rules, competed with other schools in the area. "Gymnasium" classes in 1907 included wands, indian clubs, rings and bars. Students and faculty engaged in tennis matches. By 1912 more tennis courts were added as were a baseball diamond, soccer field, football field, track and a natatorium. By 1915 physical training had become a four year requirement. In 1926 physical examinations were required.

VARIETY, PARTICIPATION AND CHANGE 1930-1939

Of the three decades of this study, the thirties represented the greatest quantity and variety of activities introduced. The curriculum included new forms of dance and swimming, a focus on posture and the origin of the adapted program. The introduction of the sophomore coeducational dance classes, which later broadened into such coeducational classes as badminton and roller skating promoted the social aspects of physical education.

Interschool competition for girls was banned for the most part except for telegraphic meets and playdays. A strong intramural program provided opportunity for competition. A new pool was added in 1936. Important to the department staff were the compilation of a department manual, installation of the Kardex for record keeping and in 1939 the initiation of a concentrated double period for physical education for girls, twice per week.

EXPANSION AND ENRICHMENT 1940-1949

By 1943 nearly every student participated in the intramural program. No diminishing of offerings was evidenced. Additional activities introduced were conditioning, tumbling, exercises and physical fitness, exhibiting some influence of the war years. Students gained new leadership roles as swim assistants and members

of the Pool Guard. Enrichment ranged from performances by visiting tennis professionals to demonstrations of ballet and square dance by distinguished groups.

STABILIZATION AND RENOVATION 1950-1960

The fifties were characterized by substantial growth and predictions of even greater enrollment. The community decided on expansion of existing facilities. Additional teaching stations, and more locker and storage facilities resulted. Athletic fields were also added. There was no cut-back in program but fewer new activities were added. Letter grades and credit were awarded consistent with other departments.

A film made by the Athletic Institute included scenes from New Trier's physical education program for girls. Highlights of the decade included a visit by the Scottish Hockey Team and Life Magazine (Oct. 16, 1950) printed a feature article on the school. Staff meeting agenda indicated provision of a department library for both faculty and students, and significant concern for publicity given the Kraus-Weber physical fitness studies was noted. Instructors were required to write course outlines and daily lesson plans.

REFLECTIONS ON THE PAST

Of the 106 opinionnaires mailed, 50 were returned. Each decade was represented as were the categories, GAA, other students, staff, school board, and administrators. From this information several innovations were chosen and considered in depth in order to determine how, why, and by whom they were introduced. Representative of those innovations which gained most recognition were: the adapted program and medical classification; posture pictures; the double gym period; several from the area of swimming, i.e., swim assistants, life saving, water demonstrations; operation of the intramurals through a student managing system; dance demonstration; and department innovations such as the compiling of a manual, a Kardex system for records, and staff committee responsibilities.

Personal interviews with former staff were conducted to gain further information. In general the response to these interviews was as follows: (1) Parents and community supported the program of the Department of Physical Education for Girls. (2) Iris Boulton, department head, was named most often as instigator or assumed instigator of innovations. (3) The top administrators had supported the program even though they were criticized at times for that stand. (4) Those who might be considered in lower administrative positions and some teachers in other departments apparently opposed particular innovations such as the double physical education period.

CONCLUSIONS

Hypotheses were supported by the data except for two sub-points Figures were not available to substantiate age and experience of all New Trier teachers at time of employment. However, within the Department of Physical Education for Girls this point was confirmed. The supposition that eighty-five percent of students would be college preparatory oriented was not supported over all the years of

the study. This number was appropriate for the decade of the fifties and in some years reached the 90 percent figure.

Characteristics of an organization determine the amount of change which will take place. Where there is expectation of change, innovation flourishes. If an innovation is approved and accepted it may prompt other changes, thus building momentum for change.

It is apparent that successful educational innovation requires a complex set of conditions. New Trier was located in a growing community where there was not only expectation of change, but expectation of excellence. Where income and education of residents is high it is likely they will lend financial support. Mutual trust between community and school allows a high degree of autonomy for specialists, and enables them to initiate change.

Awareness and recognition of needs on the part of innovators, and a facility for communicating effectively are essential. Sensitivity to the best time for introducing change should not be underestimated. These attributes, from all indications, characterized the department head in girls' physical education. It appears that innovation begins at the top but the "top" may be the community, the administration, or the department chairperson. In any event, all of these must support the change.

Interestingly, the greatest number of innovations in the New Trier program was initiated when the school enrollment was less than 3,000 and the staff numbered ten or less. The implication seems to be that it is easier to initiate change in a small, cohesive, growing organization than to convince a large number of staff and students that change is essential.

However, it probably is most interesting to note that practices being promoted today, and even mandated, bear a great resemblance to innovations introduced some forty or more years ago at New Trier. Adapted physical education has gained national prominence and support as have coeducational physical education and lifetime activities. Fitness and conditioning are recognized as not only beneficial, but essential. Modular scheduling parallels to some extent the idea behind the double gymnasium period. So by reflecting on the past it is possible to find something almost new!

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The Women's Swimming Association Of New York: The Golden Years, 1920-1940

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The Women's Swimming Association (WSA) of New York provided American Women with their first opportunity to train for national and international competition under the auspices of an organization founded and developed by women. Charlotte Epstein assembled key swimming enthusiasts and on October 20, 1917 the Association was officially organized. (3) Several women coaches from New York City and approximately fifty members of the National Women's Lifesaving League were also in attendance at the initial meeting. The founding members agreed to promote interest in swimming, provide instruction in all phases of aquatics, and offer opportunities for competition. The WSA was almost immediately ready to enter the competitive arena when Claire Galligan, Lucy Freeman, Josephine Bartlett, and Charlotte Boyle, some of the most outstanding swimmers of the lifesaving League, joined the new organization. Charter members elected to offices were Ida Koverman, President; Charlotte Epstein, Vice-President; Elizabeth Fisher, Treasurer; Elsie Viets and Francis Ricker, secretaries. (7) By 1924 the Association had clearly defined its mission stated in the Constitution and By-Laws; "The purpose of this Association shall be to teach swimming and all branches of aquatics to women and girls, to encourage its practice and to promote competition therein." (1, p. 3)

The organizational structure of the Association strongly supported their competitive objective. A fifteen member Board of Governors directed the club's activities. They conducted and supervised the general business of the Association, authorized the expenditure of funds, and received and acted upon committee reports. The powerful competitive sports committee had control of all competitive activities, identified candidates for team membership, and directed the training program. (1, pp. 6-7)

WSA Headquarters

The WSA's headquarters consisted of several rented pools in New York City for the first twelve years of its existence. Permanent headquarters were established March 15, 1929. Located at 204-6 East 77th Street in the city (3) the four story brick building was built at a cost of $150,000.00 and represented the latest design of its day. The New York Times described its beauty:

> ...the pool is lofty occupying the space of three floors. High skylight windows extending across the entire...end admit the sunshine in fair weather.... The floor and lower part of the side walls...are in cream colored tiles also trimmed in pale green. The pool...affords

> even footing for 15 feet at the shallow end...for beginners...then the bottom shelves down gradually so that a deeper 60 foot course is available for advanced pupils and proficient swimmers. The pool is equipped with regulation 3 and 10 foot spring boards for fancy diving.... A balcony surrounds the natatorium at the height of the second floor, providing accomodations for spectators.... (11)

Spacious dressing rooms occupied almost the entire ground floor. The remaining space consisted of a foyer, offices, reception area and lounge. According to The Times, it was the first building of its kind established for the express purpose of housing a women's swimming club. (11)

Although the highly motivated naiads were destined to become intensly competitive, they were reminded of their expected demeanor summarized in the genteel motto, "good sportsmanship is greater than victory." (5) Elsie Viets Jennings, recalling the meaning of that motto some fifty years later in an interview with the authors, clung to the pre-Lombardian belief that "it was better to be a good loser than a good winner." (3)

AAU-WSA Feud

Six years after its inception the Association's Board of Governors realized their actions were not entirely autonomous. In the spring of 1923 the National Registration Committee of the Amateur Athletic Union (AAU) ruled that no American athletes would be permitted to compete abroad. The Union believed that lengthy trips would detract from Olympic preparation, therefore, world class swimmers Helen Wainwright, Aileen Riggin, and Gertrude Ederle were ordered to cancel their planned trip to England. Association spokeswoman Charlotte Epstein appealed to the AAU Board of Governors to reverse its action but the Union refused. The WSA had agreed to compete in seventeen meets between May 28, and June 30, 1923. The club promised a strong fight in an attempt to reverse the AAU ruling. On May 3, 1923 patrons of the New York Times read: "One of the stormiest battles in the history of the AAU is assured." (8)

In spite of the club's strong objections the Board of Governors of the AAU voted to sustain the decision of the National Registration Committee. (4) The WSA defied the AAU's decision and continued plans to send their swimmers to Europe. On May 16, 1923 the three naiads and their chaperone, Charlotte Epstein, sailed for England. (9) The swimmers, however, abruptly ended their summer swimming tour when the AAU demanded that they return to the United States.

In a move to become self-governing the Association approved tentative plans in November, 1924 to form a national federation of women's aquatic clubs. They had already assisted with the organization of women's swimming clubs in a number of cities, and Charlotte Epstein proposed that a national organization be formed which would control womens' swimming in the United States. (10)

Although having enthusiastic intentions and an established local organization, the WSA never succeeded in controlling women's swimming in the United States. The powerful Amateur Athletic Union had assumed control of women's swimming in November, 1914 and did not relinquish its national control. (6, p. 20)

The Golden Years

The golden years of the WSA were from 1920 to 1940 during which time the winged-foot organization launched America into national and international swimming prominence. At the helm was Louis de Brada Handley, the renouned swimming authority. Handley coached the club from its inception until his death in 1956. He, like other Association workers, received no compensation for coaching the team. Expert coaching and talented swimmers enabled the WSA to enter international competition in 1920. America's first distaff Olympic swimming and diving team was strengthened by members of the famed New York swimming group. Six of the fifteen team delegation were WSA members. American women, competing in the Antwerp Olympic Games of 1920, primarily because of performances by WSA swimmers and divers, achieved unprecedented success. American distaffers in their Olympic debut won four of the five aquatic titles. America's first Olympic swimming champion, Ethelda Bleibtrey won gold medals in two individual events and one team event while fourteen year old Aileen Riggin, also a WSA member, won the Olympic fancy diving crown.

During the Association's twenty "golden years" twenty-five Olympic team berths were claimed by the New York based club. In some instances the same swimmer competed in multiple events. The New York Club launched America into Olympic prominence by clearly dominating the 1920, 1924, and 1928 Games. America's second Olympic swimming and diving appearance in Paris during 1924 established America as a power among the world's naiads. The United States claimed five of the six titles in swimming and both diving events. WSA swimmer and future conqueror of the English channel, Gertrude Ederle led the United States by winning one gold and two bronze medals. Aileen Riggin, in her second Olympic appearance became the only member of the United States squad ever to win swimming and diving medals in the same Olympics. She won a silver medal in fancy diving and a bronze medal in the backstroke. The only double achievement of its kind was captured by Helen Wainwright when she won silver medals for fancy diving in 1920 and swimming in 1924. Gertrude Ederle, Helen Wainwright, and Martha Norelius swept the four hundred meters freestyle. Their finish marked the first and only time in Olympic history that all three swimmers came from the same club--the WSA. America's third Olympic swimming and diving delegation collected five of seven gold medals at the Amsterdam Olympics in 1928. Seven of the eighteen team members were from the WSA. From 1920 to 1936 WSA swimmers and divers accounted for seven individual gold medals and had at least one swimmer on three championship four hundred meter relay teams. They won four silver medals and four bronze medals. The New Yorkers boasted that they could have, as a single club, won the Olympic competition in 1920 and 1924, and perhaps they could have.

Through the sports section of The New York Times and The New York Herald readers were continually informed of the WSA's activities. Some of America's most superb swimmers and divers, trained by the famed distaff swimming organization, made swimming news. Names like Gertrude Ederle, Eleanor Holm, Martha Norelius, Alice Lord, and Helen Wainwright dominated the sports pages. From 1920 to 1940, WSA swimmers held 111 national outdoor records and 64 national indoor records. They established 17 world records between 1920 and 1936. From 1925 to 1940 the WSA was the power to be challenged at the AAU's National Swimming and Diving Championships. Nine outdoor and indoor championships were claimed in this fifteen year span.

Decline of the WSA

By the late 1920's the production of Olympic caliber swimmers and divers began shifting to other parts of the country. In 1944, the WSA shared the domination of women's swimming with the Riviera Swimming Club of Indianapolis and the Multnomah Club of Portland. Collier's Magazine referred to the women's swimming powers as the "Big Three." No longer did the WSA enjoy the status associated with being America's number one swimming power. The advent of AAU age-group swimming competition in 1951 and its national implementation in 1952 furthered women's competitive swimming in the United States. In 1960 Barbara Nullmeyer and Mary Ruddy, in an unsuccessful attempt, became the last WSA members to try out for an Olympic team. (2) In that same year the powerful Santa Clara Swim Club under the tutelage of George Haines resumed the production of Olympians.

On September 30, 1974 the Women's Swimming Association of New York officially disbanded after fifty-seven years of existence. According to Elsie Viets Jennings and Handley's successor, Marie Giardini, the closing was due to four factors:

1. The declining membership meant less financial support,
2. Property taxes were continually increasing and the swimming pool became too costly to operate,
3. Parents, concerned for their children's safety, were reluctant to permit travel to the city for practice, and
4. Growth of other clubs in the region, staffed by an increasing number of qualified coaches, offered easier access for increasing numbers of swimmers. (2)

A prominent era in the development of women's swimming in the United States had come to a close. However, the purpose of the Women's Swimming Association was a very functional one in that aside from encouraging participation in a socially acceptable competitive outlet for women in the 1920's, women's competitive swimming was elevated to a new level of public consciousness through the production of Olympic caliber swimmers.

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Women in Physical Education and Sports At Centre College from 1860 to 1978

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Centre College of Kentucky, a small liberal arts college in Danville, was chartered in 1819 for men only. Higher education for women was not available in the Centre area until a charter for an institute for young ladies was granted to a group of businessmen in Danville in 1854. This institution later became Caldwell College. In time, Caldwell College became Kentucky College for Women. In 1926, this school became the Woman's Division of Centre College. Gradually, the Woman's Division was integrated with the Men's division and by 1966, Centre College was a full-fledged coeducational institution.

This study was designed to trace the history of the physical education program for women and their participation in competitive sports at Centre College from 1860-1978. Efforts were made to present significant events in the history of sports participation by these students as they reflected cultural changes and national trends in physical education and sports for women.

Sports have long been a tradition of the men at Centre. The first intercollegiate football game in the South was played between Centre College and Transylvania University in 1880. The golden era of football at Centre was in the early 1920's when the "Praying Colonels" upset the mighty Harvard team 6-0 on October 29, 1921 in Cambridge, Massachusetts. Football is still a part of the Saturday afternoon tradition at Centre. In written accounts of the founding and history of Centre College, the men's athletic programs have received considerable attention, but no history has been found which included any mention of the sports participation by Centre women. In fact, few histories have been written anywhere about women in sports and physical education.

In 1930, Dorothy Ainsworth (1) concluded that the earlier physical education programs in twelve selected women's colleges provided exercises entirely for the purpose of improving and maintaining the health of the students, but that in the twentieth century, there was a trend toward including sports activities that more nearly met the educational goals of mental, moral and social development. The earliest sports activity in which college women participated was horseback riding. This appeared at Elmira in 1859. Following this, croquet, walking, bowling and bicycling were popular among the female sex. Tennis and archery emerged in the 1870's and were soon followed by basketball and volleyball.

This study of the program at Centre College is divided into four time periods. The first period prior to 1901 coincides with the later Victorian era. It was a period of organization and growth for Caldwell College. The second period, 1901-1926, includes the period of World War I and the passage of the nineteenth Amendment to the Constitution. Caldwell College became the Kentucky College for Women during this period. The third period spans the years from 1926-1959. In 1926, the Kentucky College for

Women became the Woman's Division of Centre College. The philosophical creed of the Women's Division of the National Amateur Athletic Foundation was a strong influence during this period. A movement toward equality and opportunity in physical education and sports characterizes the fourth period, 1959 to 1978.

1860-1901: The major concern during those early school days for young women was the health of the student. Physical education was mentioned in the very first catalog of the school along with a rule which stated that "young ladies are required to exercise on the verandas, or out-of-doors every morning and evening." In 1861, Dio Lewis opened his Normal Institute for Physical Education in Boston where he taught activities called "Light Gymnastics". These exercises were designed for flexibility more than strength. In 1865, the system of light gymnastics was introduced at Rockford, Vassar and Elmira. That same year, Octavia Gould, Instructor of Light Gymnastics and Physical Culture, introduced this system at Caldwell College. This was continued until 1870.

In 1885, Baron Nils Posse, a graduate of the Royal Central Institute of Gymnastics in Sweden, was hired to teach twenty-five women instructors the Swedish system of gymnastics in Boston. Eight years later, Baron Posse's lessons were included in the Physical Culture program at Caldwell College.

Caldwell College, although only a good preparatory or finishing school for young ladies, seems to have provided a program in physical education which often paralleled that of the more prestigious Eastern schools for young women.

1901-1926: From 1901-1910, physical education was taught by the elocution instructor whose primary interest was elocution; however, it was during this period that sports became popular as extracurricular activities. This sports movement, led by the eastern women's colleges, soon spread across the land. The first Athletic Association was organized at Caldwell College in 1901. In 1903, Emma Hanna came to Caldwell College from Mt. Holyoke to teach mathematics. With the help of Edith Vaughan, modern language instructor, she organized two basketball teams at Caldwell College. The Kickapoos, a team composed of local girls, competed in a series of games with the Tuscaroras, a team of girls who lived on campus. A championship game was played at the end of the season. The Tuscaroras won this first game, which was played out-of-doors in late November. Spalding's rules, published in 1901, were used. According to these rules, there were six players on a team and the court was divided into three zones.

The Tuscaroras won again in 1905. The girls abandoned Spalding's rules after one year as being too restrictive and played by the rules used by the Centre College men, and that year, for the first time, men were admitted to the game as spectators.

The competition between the town girls and the house girls reached such intensity around 1906 that the college administration took measures to change the structure to interclass competition and to change the names of the teams to the Cherokees (classes graduating in odd number years) and the Wahpanoochies (even number). Competition between these two teams continued until 1915.

The first intercollegiate basketball team competed in 1915-16, and the catalog was very explicit in its rules and regulations concerning participation. The team record for that first year was 8-1. With the birth of the varsity team came the death of the

Cherokees and the Wahpanoochies; however, new intramural teams with new names evolved after a couple of years and soon intercollegiate basketball was abandoned.

After 1911, the physical education program was strongly influenced by Dr. Dudley Sargent and one of his students, Delphine Hanna, who taught at Oberlin College. Except for two years, all of the physical education teachers from 1910-1926 were graduates of Oberlin College or other Midwestern colleges.

In the twelve colleges studied by Ainsworth, activities other than gymnastics were first mentioned on the physical education program between 1906 and 1925 (1:31). Field hockey and tennis were included in the program at Caldwell College in 1911.

From 1920-1926, the stated goal of the Athletic Association was to provide an opportunity for every girl to participate in sports and each student was expected to spend one hour a day in the gymnasium or out-of-doors.

Until the beginning of the sports movement, women had only been allowed to participate in physical activity for health reasons. The demand for competition and increased participation came from the students themselves. The interest was so intense, however, that many school officials became concerned about the effect that this would have on the students. The passing of the Nineteenth Amendment to the Constitution may have contributed to the enthusiasm of the girls and the concern of the administration. Despite any social influences that might have affected the trends, women leaders attempted to avoid the mistakes made by the men in their athletic programs. In 1917, the American Physical Education Association appointed a committee on Women's Athletics to "direct, safeguard and promote sports activities for girls and women." The concern of the committee had far-reaching effects, thus the highly emphasized young varsity basketball team at Kentucky College for Women disappeared almost as quickly as it appeared and was replaced by the "more wholesome" interclass competition. In April 1924, a Women's Division of the National Amateur Athletic Foundation was formed. This group presented a platform of standards for women's competition that favored competition for the enjoyment of the sport and that de-emphasized spectator sports, awards of extrinsic value, teams involved in the dangers of travel, and gate receipts. Before this group was formed, Kentucky College for Women was in line with its entire platform.

1926-1959: May festivals, carnivals, circuses and vaudevilles were popular at the Woman's Division of Centre College during this period. These provided opportunities to demonstrate athletic skills for an audience when spectator sports were not approved. They were also necessary as money-making projects if the women were to have the equipment and facilities necessary for an active program. This was generally the case in women's colleges during the first half of the twentieth century.

During the thirties, black serge bloomers and white middy blouses were replaced by short gym suits, and the intramurals flourished. In the mid-thirties, the Kentucky Federation of Women's Athletic Associations was organized. This organization sponsored annual and semi-annual play days. The purpose of the organization was to "create a friendly rivalry among the colleges in Central Kentucky."

The social affairs connected with the play day were very much

a part of the event; e.g., at the annual play day held at Centre in 1941, the teams were treated to lunch at the Country Club and tea at the end of the day, and after field hockey at the University of Kentucky in 1944, the Centre girls were given lunch and tickets to the University of Kentucky versus West Virginia football game. Play days and the related social events continued throughout the forties.

The Women's Athletic Association sponsored intramural contests in sixteen different sports during this period. They also organized hikes and dance fetes. Clog dancing was popular and was often mentioned as entertainment during half time of the championship basketball games. Interest and participation were especially high during this period and the alumnae were quick to respond with enthusiasm about the importance of sports participation during their college years.

1959-1978: The second half of the twentieth century was one of rapid change. Centre College adopted a new curriculum and a new calendar. The women's campus was abandoned and the students were moved across town to new buildings on the former men's campus. An expansive building program was undertaken. A former high school building was converted into a facility for physical education for Centre women. The concerns of the students changed as world situations changed. As elsewhere, students became involved--at times fighting the system as it affected their lives, and at other times getting involved with the system to make changes.

Women demanded opportunities for participation, vacillating between emulating the men's program and creating a women's program. The leaders in the program during this period experienced frustrations, hard work, constant challenges and personal rewards which were usually of an intrinsic nature.

Until 1964, each woman student was required to take a class in basic activities or body mechanics, dance or rhythms, a team sport, two individual sports and swimming. Six semesters of physical education were required until 1966. By 1967, only four semesters of physical education were required and almost all classes were coeducational. Students could select any combination of activities to meet the requirement. In 1976, all classes were opened to men and women on a coeducational basis. A new requirement was adopted by the College faculty in 1978. Instead of the elective system previously used, this program requires that each student demonstrate a proficiency in aerobics and swimming, complete a first aid course and a basic course in an individual sport, a team sport and a non-competitive activity such as dance or gymnastics.

Intramurals continued in popularity during this period along with the growing interest in intercollegiate competition. Intercollegiate basketball and field hockey teams were organized in 1960, a tennis team in 1965, track and field team in 1972 and a softball team in 1978. Since 1975, women have been invited to compete on the swimming, cross-country, soccer and golf teams with the men.

Centre is a member of the Association of Intercollegiate Athletics for Women (AIAW) and a charter member of the Kentucky Women's Intercollegiate Conference (KWIC). Centre women have competed in both state and national championships.

Physical educators, through the AIAW, have continued to offer

direction for quality programs for women with the focus on the individual participant whose primary role is a college student. This has always been the philosophy of Centre College regarding its sports program for women, and since World War II, for men, also.

Summary. The purpose of this study has been to trace the history of the women's physical education and sports program at Centre College. The history began with the founding of Henderson Female Institute, a school for young girls in Danville, Kentucky, which over a period of time became the female sector of Centre College of Kentucky.

The content of the physical education program was determined by examining the school catalogues and books on the history of physical education. It was necessary to rely extensively on yearbooks, questionnaires, and interviews with alumnae to determine the role of competitive sports in the school program.

With faculty members recruited from schools that were leaders in the profession, the women of Caldwell College, Kentucky College for Women and Centre College seem to have always had a physical education program based on the current philosophy of the day. In the nineteenth century, the physical education program at Caldwell College closely paralleled the programs in the more prestigious Eastern schools for young ladies. Delphine Hanna, chairman of the physical education department at Oberlin, influenced the program in the early twenties through her students who were appointed to teach at Kentucky College for Women.

Through the years, the emphasis changed from exercise for its health value to activities for their educational value. The program, which at one time consisted entirely of gymnastics, developed into a wide range of activities for health, leisure time, personal safety, and the educational goals of team play.

The competitive sports program was not in existence before the twentieth century. Basketball was introduced to the girls in 1904 and the enthusiasm was apparent from the beginning. The first intercollegiate team competed from 1915 to 1917. As school officials and professional women became concerned about the impact of professionalism in high competitive sports, the intercollegiate team was replaced by intramural teams. With an intramural championship as the highest goal, maintaining interest was increasingly difficult. To satisfy this need, play days became popular. These existed until the second half of the twentieth century when the women again formed intercollegiate teams and competed in regular season schedules.

Prior to 1960, the program usually included either intramural or intercollegiate teams--not both. With the onset of contemporary intercollegiate teams, the intramural program continued to grow with an emphasis on providing opportunities for students of all skill levels.

Opportunities for competition in sports were not always supported with money, staff, or publicity but the students competed in spite of these inadequacies. Student interest in athletics is not sudden or new--it has been in the heart of each generation of young women, at least for the past century.

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Women's Equity Movement in Sports At a Large University: A Movement Within a Movement, 1970-1977

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Prologue

As a prelude to the extraordinary change in sport programs for women on the University of Maryland campus, unusual campus upheavals took place. Student riots over the continued war in Vietnam, and other issues, occurred spring of 1970, 1971, and 1972. These disturbances brought the National Guard to the campus which was put under curfew. Charles Bishop came as the new chancellor summer of 1970 and campus re-organization began. Unusual social conditions drew women together to form a Women's Caucus (1971) and, aided by the Human Relations Office, created 1970, the caucus confronted the administration with the urgent need for the university to be more responsive to needs, interests and aspirations of women students. The women's movement started in society at large with the emergence of NOW and Women's Equity Action League rather than in the athletic arena and feminists served as the "cutting edge" that provided leadership towards new concepts about women's roles and aspirations.

The Period 1971-72

The fall of 1971, the newly formed Women's Caucus chaired by Nancy Anderson of the Department of Psychology first met, and women began to think of themselves as a viable political force. The culmination of the productive school year for women was the meeting between the Women's Caucus Committee and Chancellor Bishop. The committee presented Dr. Bishop with a list of requested actions: to investigate and publish the conditions and status of women on the campus and to create an advisory council on women's studies to develop courses for an interdisciplinary women's studies program.

On the national level, one of the most change producing pieces of legislation to ever appear was passed on June 23, 1972, Title IX of the Education Amendments Act. A conference, "Women and Sport" was held at Penn State the summer of 1972, and research papers concerning women in sports and athletics were presented.[1] In 1971 and 1972, the Association for Intercollegiate Athletics for Women (AIAW) was emerging as an association to regulate women's athletic competitions.

Yearly Events of 1973

Women won the right to control their own reproductive systems when abortion was legalized. The fledgling Association for Intercollegiate Athletics for Women was not allowing women with scholarships to participate in AIAW sponsored contests. The Kelleymer vs. NEA, AAHPER, DGWS, NAPECW, AIAW and FAPECW case developed when students, recipients of athletic scholarships at Marymount College,

the director of physical education and the school tennis coach filed a suit in the U.S. District Court for Southern Florida. The AIAW rules that prevented women holders of scholarships from participating in AIAW sponsored contests were ruled illegal by NEA lawyers because these rules were discriminatory towards women athletes.[2] Sports Illustrated ran a three part series "Women in Sport" in May and June of 1973.[3]

Chancellor Charles E. Bishop, December 3, 1973, established the Commission on Women's Affairs charged with the responsibility to "identify unique problems faced by women on this campus and propose solutions to them." This action resulted from a promise that he had made to the Women's Caucus. In December 1973, Carl G. Croyder, a concerned parent of a female student, Paige Croyder, enrolled at the University of Maryland, filed a formal complaint under Title IX against the University of Maryland with the Office of Civil Rights of the Department of Helath, Education and Welfare (HEW). The complaint charged gross discrimination against women in the area of intercollegiate sports. Mr. Croyder was the father of five girls, and he wanted them to participate in high caliber athletic experiences while in college. He had observed that young men gifted in athletics received numerous benefits, and he felt that the existing University of Maryland athletic program for women would not enable his daughters to develop to their full potential in this area. His action provided the catalyst that accelerated the development of the women's athletic program. He used the public forum of local newspapers, radio talk shows and other means to express his point of view.

Yearly Events of 1974

January 1974, Virginia Beauchamp was appointed Acting Coordinator of the budding program for Women's Studies. Spring of 1974, a three hour course "Women in Sport," was added to the curriculum of the physical education department.

Prior to 1970, there had been few books on the market for women's studies; however, with the development of Women's Studies courses on various campuses, the book market was exploding with books related to women in almost every discipline. The Gerber, Berlin, Felshin and Wyrick book, The American Woman and Sport[4] (later made into a film) and Hoepner's Women's Athletics: Coming with Controversy[5] were books in the physical education and sport domain.

April 1974, at the national level, the Representative Assembly of the American Alliance of Health, Physical Education and Recreation (AAHPER), Anaheim, California, supported implementation of Title IX and elaborated: "interscholastic and intercollegiate competitive athletics have educational value and are an integral part of the educational system." Although the guidelines of Title IX had not been approved, it was becoming apparent that many of the most radical changes would have to be made within the pervue of the physical education and athletic departments. On the College Park campus, immediately following the AAHPER National Conference in Anaheim, a conference was held, "Title IX: Target 1979, Ending Sex Discrimination in Helath, Physical Education Recreation and Dance."

In July, a "Report of the Chancellor's Commission on Women's Affairs Phase I, Status of Women Students" was privately sent to the chancellor. It reported that the university's athletic budget for men 1973-74 was $2,015,000 including 100 football scholarships and nine basketball scholarships at $2,840 apiece. The women's athletic budget was $19,000. Young male athletes were currently receiving about $330,000 in scholarships. Coaches of women athletic teams were all members of the physical education faculty who were released from teaching three contact hours during the semester of coaching duties. Their male counterparts were paid extra for coaching and their salaries were considerably higher. However, women coaches seemed to prefer having released time to coach. In the 1974 report, recommendations were made that money be allocated to women's athletics equivalent to the percentage of women students contributing; that athletic facilities be improved, and services provided male athletes (laundry, medical, etc.) be available to women. The school year 1973-74, women who were physical education majors were required to purchase their own uniforms, although for the first time, non-majors received free uniforms. All women laundered their own uniforms and purchased their own swim caps. The year 1974-75, a new policy was instituted that all women receive uniforms, as well as free laundry.

Yearly Events of 1975

At the national level, 1975 was designated as International Women's Year, and a world conference was held in Mexico City, attended by women from all over the world. In the United States, thirty-three million adult women worked and composed 48 percent of the labor force. President Ford appointed the President's Commission on Olympic Sports to survey the quagmire that many believed hampered athletes in representing the United States at Olympic games. A new publication Woman Coach, appeared in print. January 26, 1975, Immaculata College and the University of Maryland women's basketball teams participated in their first televised game held in Cole Fieldhouse, University of Maryland campus. The same month, the Women's Rights Project of the American Civil Liberties Union published "Sex Discrimination in Athletics and Physical Education."

A week after President Ford approved Title IX guidelines, Mark Asher of the Post wrote:

> University of Maryland athletic director Jim Kehoe blasted sweeping new federal rules against sex bias in intercollegiate athletics as "unrealistic, impractical and unsound."

June 20, 1975, the Board of Regents of the University of Maryland ordered the university to begin complying with the "letter and spirit" of the new federal rules barring sex discrimination in athletics as well as other educational activities. B. Herbert Brown, newly elected board chairman, stated, "Women are entitled to their day on the athletic field and in the gym. Women coaches should be paid adequately."

Carl Croyder, who had filed a Title IX complaint December 1973

against the university said, "It's a credit to the state of Maryland that the Board of Regents has taken this action. It's too bad the professional educators involved did not have the foresight and couldn't have led the way."[8]

June 1975, the White House released the proposals for enforcing Title IX of the Educational Amendments of 1972 which banned sex bias in any federally aided educational program. John Fuzak, president of the National Collegiate Athletic Association (NCAA) said that if the rules for implementing the laws were followed, it would "spell disaster to the intercollegiate programs at most colleges."[9] Hearings on Title Ix regulations were held in Washington, D.C. by the Committee on Education and Labor, House of Representatives for six days in June. Although extensive pressure from NCAA and others was exerted to remove revenue producing sports from the jurisdiction of Title IX, the regulations became effective July 21, 1975.[10]

Many modifications of the university's intramural scene began fall 1975. The biggest change was that cross-participation between the men's intramural program and the Women's Recreation Association occurred. Women undergraduates could, for the first time, enter tournaments the men's programs formerly conducted in ten sports, including touch football, soccer, softball, track and wrestling.[11]

October 1975, the Board of Regents formerly approved "granting" women's athletic scholarships "beginning fall 1976" as part of the university's effort to comply with Title IX federal sex discrimination rules. Several women coaches resigned their coaching assignments when the regents continued to support the position that athletic scholarships be given to women athletes as well as men. The six women athletic coaches involved wrote the Diamondback, "Equality is not the issue, rather it is a difference in interpreting how equality is to be attained." These coaches charged that a previous article "grossly misrepresented the efforts and value positions of the coaches involved."[12] In response to the published statement of women coaches, Barbara Bergmann wrote "Letter to the Editor" of the Diamondback saying, "I wonder why these women's team coaches have never threatened to resign when their players have been denied access to first class courts and equipment?"[13]

Paige Croyder, a junior at the university, elaborated about her objections to unequal treatment and said, "If men have scholarships, women should be able to have them."

Opposition to Title IX still raged nationally. John G. Tower of Texas introduced a bill to exempt intercollegiate athletics from the sex discrimination provisions of Title IX, but the bill was defeated.[14] November 1975, Yvonne Zitta of Maryland Public Interest Research Group (MaryPIRG) and chairwomen of the committee to investigate discrimination in athletics in regard to Title IX released a report that found "definite discrimination against women in the athletic department." A conference, Women in Sport, was sponsored by NAGWS and took place in the National Education Center, Washington, D.C. December 4-8, 1975.[15]

A proposed Human Relations Code had gone through more than four

years without official approval was at last approved by the state attorney in September 1976 and became effective October 18, 1976. The code provided grievance procedures for discrimination on the basis of race, color, creed, sex, marital status, personal appearance, age, national origin and political affiliation. The code was implemented fifteen days after its texts were widely distributed throughout the campus.

On the College Park campus, the intramural sports office offered sports open to women -- horseshoes, touch football, soccer, weight lifting, foul shooting, wrestling, mixed table tennis, handball, racquetball and track and field. Women competed separately from men in horseshoes, touch football, golf, cross country, one on one, foul shooting and racquetball. The Women's Recreation Association offered volleyball, mixed tennis doubles, mixed badminton doubles and a swimming marathon.

At the fall meeting of the AAHPER Board of Governors, a Collegiate Sport Manifesto was approved which stated: "Within the conduct of athletics the welfare of the athlete should be basic, the programs must have an educational orientation..."[16]

December, 1976, the first student to qualify for the twenty-one hour basic requirement in Women's Studies was awarded a certificate. The degree program in Women's Studies had been approved in November, along with the approval for the granting of a certificate.

Yearly Events of 1977

By the year 1977, the accomplishments of the women's movement were decidedly uneven. Stalled at the Start documented HEW's failures to investigate complaints and to enforce federal legislation concerning discrimination. The failure of HEW to act had for several years been detrimental to the women's movement by major women's associations.

The fall of 1977, at the University of Maryland, athletic scholarships for forty-six women athletes were given to women divided among eight sports. Sixty-five scholarships were planned to be given to women in the fall of 1978. The report of the President's Commission on Olympic Sports 1975-1977 was released and "wholeheartedly supports the non-discrimination intent of Title IX."[18]

In November of 1977, fifteen thousand people filled the Astroarena in Houston for the National Women's Conference. The conference produced a blueprint for implementing sexual equality. There was a decided trend for aggrieved women to use new civil rights legislation and have issues settled in court. Closed doors of opportunity were being forced open. Title IX had brought about radical changes in sport programs in elementary schools through colleges. The visibility of financially successful women athletes were providing role models for young women. Progress had been made in actualizing opportunities for women but equity remained elusive.

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In Search of The Golden Age of Women's Sports

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This study began as an exploratory reading project designed to collect information concerning American women in sports, then became delimited to a particular period of time because of frequent reference to The Golden Age of Sports, a period theoretically marked by a peak in human endeavor, economic prosperity and an absence of war or famine (Durant & Bettmann, 1965). Such an age is also characterized by a corps of talented writers whose dramatizations reach the general public and help create popular acclaim for the performances and performers being chronicled.

All of the authors using the term golden included all or much of the colorful era known as the Roaring Twenties as part of their golden age in sports; however, these chroniclers did not always agree regarding the starting and ending dates for this age. For the purposes of the present study, the investigators chose to accept the Durant-Bettmann dates of 1919 and 1930. This phenomenal era began in 1919, the year Jack Dempsey defeated Jess Willard for the world heavyweight boxing title. It closed on a day in September, 1930, when golfer Bobby Jones won the United States Amateur — after having won the British Open, the British Amateur, and the United States Open in the same year.

Between Dempsey's 1919 feat and Jones' 1930 successes were numerous achievements by other male athletes, many of whom were immortalized by male reporters such as Damon Runyon, Grantland Rice, Heywood Broun and Ring Lardner. But what about the American women? Was this also their golden age of sport?

To answer this question the present study focused upon five sports and the outstanding female performers in each during the years 1919-1930. The chief sources of data were: the sport pages of the "New York Times", "St. Louis Post-Dispatch", and "St. Louis Globe-Democrat"; interviews with two of the era's female Olympians, and a number of available books.

Sports were firmly established in America by 1919, especially for men. College sports were very popular, and professional sports were growing. Departments of physical education, which had filtered down from the college level, were now a part of the organizational structure of many city high schools and were offering a number of sports, both at the interscholastic and intramural levels. Younger children, mostly boys, were playing sports on elementary school playgrounds during recess and in vacant lots throughout the summer.

The year 1919 was rife with change, a condition that arose during World War I and was to prevail throughout the Twenties and nourish a national mood for new adventures for women as well as men. As early as 1920 American women were to be blessed with two important changes, namely, the implementation of the suffrage

granted by the 19th Amendment and the introduction of the disposable sanitary napkin onto the public market. Cellulose creped wadding, which was produced by Kimberly-Clark Corporation during World War I for surgical dressings since it offered greater absorbency than cotton and was more resistant to infestation, had been discovered by nurses at the front to make an ideal sanitary napkin — one which could be disposed of easily. The first domestic products to grow out of this discovery were marketed in 1920 by Kimberly-Clark and were gratefully purchased by women who were anxious to throw away the washable menstrual cloth they had been using. Although there was strong objection to Kotex advertising, the product was enthusiastically endorsed and widely used before the close of the Twenties (correspondence with Kimberly-Clark, 1977). This simple product, along with the 19th Amendment and other changes, created an atmosphere of openness and freeness within the nation that would contribute to major changes in sport fashions; bloomers and other massive cover-ups were to become things of the past.

The present study found no evidence of professional sports for American women prior to 1919, and only the beginning of professionalism in the Twenties. This being so, the investigators naturally turned to the most important showcase for amateur sports, the Modern Olympic Games, and found American women participating in seven officially sanctioned sports (Mezo, 1936), as shown in Table I. It was decided to exclude archery and fencing from the study because at no time between 1919 and 1930 did American women receive broad acclaim, Olympic or otherwise, for their performances in these two sports.

TABLE I: PARTICIPATION OF AMERICAN WOMEN IN OLYMPIC GAMES

SPORT	Year of the Olympic Games							
	1900	1904	1908	1912	1916	1920	1924	1928
Archery	No	Yes	No	No	CANCELLED	No	No	No
Fencing	No	No	No	No		No	Yes	Yes
Figure Skating	No	No	No	No		Yes	Yes	Yes
Golf	Yes	No	No	No		No	No	No
Swimming	No	No	No	No		Yes	Yes	Yes
Tennis	No	No	No	No		No	Yes	No
Track & Field	No	No	No	No		No	No	Yes

Women's tennis seems to have received more publicity during the 1919-1930 era than any of the other sports listed in Table I, although most of it was outside the Olympic framework. Tennis, or lawn tennis as it was called, was created in England in 1873 by Major Walter C. Wingfield; a year later it was brought to Staten Island by Miss Mary R. Outerbridge, who asked her brother to lay out a court at the Staten Island Cricket and Baseball Club. Miss Outerbridge had observed British soldiers in Bermuda playing the game and brought home a complete set of tennis equipment, though she had trouble getting it through customs as no one knew what use was to be made of these items.

Most of the tennis acclaim granted to American women during the period 1919-1930 centered around Hazel Hotchkiss Wightman and Helen Wills. Wightman was America's first durable women's tennis champion. A native of California, where she gained attention by defeating the Sutton sisters, she won the first of her four United

States Lawn Tennis Association National Singles Championships in 1909 and the last in 1919. Married to George Wightman, a president of the USLTA, she donated a silver trophy in 1923 to that association, "'for competition among women's teams throughout the world,'" (Hollander, 1976, p. 98) altnough only England and the United States have competed to date. In 1924 in Paris, Wightman teamed with Helen Wills to win a gold medal in Olympic doubles play. As an encore, she won a second gold for the mixed-doubles with partner R. N. Williams.

Helen Wills, also of California, earned her acclaim by one golden performance after anotner. This prolific player won, during the years of this study, 6 singles, 4 doubles, and 2 mixed-doubles USLTA Championships; 4 singles, 3 doubles, and 1 mixed-doubles Wimbledon Championships; she also represented her country in Wightman Cup matches, and in addition won 3 French singles titles and one doubles title. At the VIII Olympics in 1924 Wills won the singles competition as well as the doubles competition with Hazel Wightman. Wills is the only American woman ever to earn an Olympic gold medal for tennis singles since tennis — for both men and women — was removed as an Olympic event after 1924.

Golf, like tennis, was an early favorite of well-to-do American women, who played a very dainty, unspectatular form of the sport. Their first international acclaim was achieved in 1919 when Margaret Abbot of the Chicago Golf Club won the gold medal in the II Olympics (correspondence with United States Olympic Committee, 1978). Her victory, achieved in France, received little attention back home.

By the time Glena Collett was stealing the golf headlines of the Twenties the ladies' game was no longer dainty. Taught by her father, who was an expert golfer, Collett won the United States Golf Association's National Amateur Championship for Women in 1922, 1925, 1928, 1929, and 1930; she was medalist in this event in 1922, 1923, 1925, and 1927. Bobby Jones approved of her play, observing, "'Her accuracy with the spoon and brassie ... is, of course, her way of absorbing to a great extent, the disadvantage of length, which some women suffer against the best males; but she does it with little disadvantage to be noticed.'" (Hollander, 1976, p. 40). Collett was in a class by herself, the only lady golfer of this era whose performance could possibly be classified as golden.

Figure skating, like the two sports discussed above, was initially and for a long time thereafter the province of America's leisure class. Introduced at the London Olympic Games in 1908, figure skating was one of the first Olympic sports offered to modern women. The European mode of skating, a freer and smoother way of skating as opposed to America's rigid style, became very popular. The Skating Club of Boston, founded in 1911, featured this style of skating; Theresa Weld, whose father was a charter member of the Club, used the technique and became America's first national figure skating champion in 1914. She competed in the 1920 Olympics in Antwerp, where she won a bronze medal.

Along with Theresa Weld, Beatrix Loughran and Maribel Vinson were America's leading skaters during the 1920's. Between the three of them, these ladies won every United States Individual

Championship and, with a partner, every U.S. Pairs Championship between 1920 and 1930, inclusive. There were no championships conducted in 1919. At the first Olympic Winter Games in 1924, held in Chamonix, Loughran won the silver medal; at St. Moritz in 1928 she won the bronze. Vinson, a Bostonian fated to become during her lifetime America's premier figure skating coach, was also a contestant in the 1928 games which were won overwhelmingly by the Norwegian ice queen, Sonja Henie. At the World Championships held a month later in London, Vinson placed second to Henie in the individual competition.

Although the tennis players seem to have garnered the most publicity during the 1919-1930 era, within the Olympic framework it was the lady swimmers who received the greatest acclaim, and rightly so! In the 1920 Olympic Games at Antwerp, American women won 4 out of 5 events; at Paris in 1924 they won 6 of 7; and at Amsterdam in 1928 they won 5 of 7 (Hollander, 1976, p. 81).

Particularly outstanding in these games were Ethelda Bleibtrey, who won 3 gold medals in 1920, and Martha Norelius, who won her first gold medal in 1924 and two more in 1928. Equally outstanding, if not more so, were the American springboard divers; these ladies won all nine Olympic medals awarded in this event during the Twenties.

A very large proportion of the best American swimmers were members of the Women's Swimming Association of New York; for example, six of the 1920 Olympic team of fifteen women belonged to this organization (Gerber et al., 1974, p. 139). Furthermore, swimmers from this club dominated the rapidly growing national Amateur Athletic Union indoor and outdoor competitions during this period; women from this organization won 7 of the 8 outdoor 800-meter relay championships conducted during these years. In 1924 a member of this Association, Gertrude Ederle, earned a gold medal in the 400-meter freestyle relay, and as an individual she won a bronze in both the 100-meter freestyle and the 400-meter freestyle.

Ederle was destined to become women's sports first truly national celebrity, a level of fame she acquired in 1926 by becoming the first woman to swim the English Channel. Not only did she swim the channel, her time of 14 hours and 31 minutes was better than any of the times recorded by the five successful men who preceded her in this endeavor. Her achievement was enthusiastically reported to Americans coast to coast, and upon her return New York City greeted her with a spectacular ticker tape parade.

The economic and social bonds surrounding tennis, golf, figure skating — and to a lesser degree swimming — were, by comparsion, less influential in the area of track and field. The big organizational step forward for track and field occurred when the AAU conducted national track and field events for women in 1923, after Harry E. Stewart, a physical educator, had taken a team to compete in Paris the year before (Gerber et al., 1974, p. 38). The results of this trip abroad underscored the fact that many of the European nations were much ahead of the United States in organizing competition for women in sports.

AAU organizations provided most of the women competitors at the Olympic tryouts in Newark, New Jersey in July, 1928. A short time later the first United States Olympic track and field team

of 19 women sailed for the IX Olympics. At Amsterdam Elizabeth Robinson, a 16-year-old Chicago schoolgirl competing in the 100-meter run, became the first American woman ever to earn a gold medal in track and field. In addition to this success, American women finished second in the 400-meter relay and the discus. The bronze medal for the high jump also went to an American. In the only other event the contestants from all countries had much difficulty, probably because most of them were sprinters and had not been trained properly for the 800-meter run. As a result many of the women collapsed; others finished in pain and distress. One of the runners in this event, a St. Louis physical education teacher named Dolores Boeckmann, recognized the need for better training and remembered this eight years later when she was appointed the first woman coach/chaperone of an American Olympic track and field team.

As revealed in the discussions above, this study found that no more than three American women earned sufficient popular acclaim during the 1919-1930 era to support the statement that this period was the golden age of women's sports: Wills in tennis; Collett in golf; Ederle in swimming. Even these three, however, received little nationwide attention — except in the instance of Ederle's flashy return from Europe — when compared to their male counterparts.

It is more accurate to perceive the achievements of this period as a continuation of the pioneering phase of women's sports, not a golden age. The era is characterized more by change than it is by a peak of human endeavor. During 1919-1930 women's opportunities for competition were expanded, their sports attire became less voluminous and less encumbering, and they played more vigorously and more frequently in public than their predecessors. Like their contemporaries in many other fields of endeavor, the women athletes of 1919-1930 were preparing the way for future generations of Americans by establishing new mores and new expectations.

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